# TECHNICAL GUIDANCE DOCUMENT

# for

# the Implementation of

# Chapter 452 of Title 11, Hawaii Administrative Rules, entitled "Requirements for Decontamination and Cleanup of Methamphetamine Manufacturing Sites"

**State of Hawaii**
**Department of Health**
**Hazard Evaluation & Emergency Response**

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# Contents

# Contents (Continued)

**Section** **Page**

# Contents (Continued)

**Section** **Page**

# Contents (Continued)

## Appendices

# Contents (Continued)

## Tables

# Contents (Continued)

## Figures

# Acknowledgment

This document was prepared by the Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office with the assistance of clandestine methamphetamine program information from the following agencies:

Hawaii State Attorney Generals Office
Hawaii Police Department
Honolulu Police Department
Maui Police Department
Kauai Police Department
Narcotics Enforcement Division
United States Drug Enforcement Agency
United States Environmental Protection Agency
United States Occupational Safety and Health Administration
California Department of Toxic Substance Control
Missouri State Highway Patrol
National Jewish Medical and Research Center
Michigan Department of Community Health
Georgia Bureau of Investigations
Colorado Department of Public Health and Environment
Washington Department of Health
Nebraska State Patrol
Alaska Department of Environmental Conservation
Ohio Bureau of Narcotics
Minnesota Department of Health
Kentucky State Police

The guidance was further developed by incorporating findings of these studies of the National Alliance of Model State Drug Laws (NAMSDL) National Working Group on Cleanup and Remediation of Methamphetamine Laboratories.

As with earlier versions, the HDOH HEER Office, state agency staff and private contractors have provided comment, criticism, and immeasurable assistance with each draft.

We thank everyone for their efforts.

Questions regarding cleanup of clandestine drug labs may be directed to the HDOH HEER Office at:

Telephone: (808) 586-4249
From Maui (toll-free): 984-2400 ext 64249
From Hawai‘i (toll-free): 974-4000 ext 64249
From Kaua‘i (toll-free): 274-3141 ext 64249
From Moloka‘i or Lāna‘i (toll-free): (800) 468-4644 ext 64249
Fax: (808) 586-7537
E-mail: heer@doh.hawaii.gov
24-hour Hotline: (808) 247-2191

Resources and information from the Hawaii Department of Health Hazard Evaluation and Emergency Response Office about the requirements for methamphetamine may be found at http://www.hawaii.gov/health/environmental/hazard/methlab.html.

# Use of this Document

This Technical Guidance Document is intended to be used as guidance to the HDOH HEER office law enforcement officers, and to owners and operators of contaminated property and their contractors, who are complying with the terms of Chapter 452 of Title 11, Hawaii Administrative Rules, entitled “Requirements for Decontamination and Cleanup of Methamphetamine Manufacturing Sites.”

This document provides “start-to-finish” guidance through the entire process of dealing with structures contaminated from activities associated with the manufacture of methamphetamine. The guidance provides information about safety for the emergency response community and notification procedures of hazardous materials disposal; it discusses interaction between law enforcement and the Department of Health; and it describes Department of Health response and oversight duties for cleaning up residual contamination found at clandestine drug laboratory (CDL) sites after gross, or bulk chemical removal and before reoccupation.

This guidance document specifies the cleanup standards (per HDOH HEER Office) that a property owner must attain to have his/her property declared “fit for use” after the property undergoes decontamination from effects of illegal manufacture of methamphetamine. The document describes the methods to remove environmental (outdoor) contamination and residual contamination from building interiors and the requirements to demonstrate that cleanup standards have been met via sampling and laboratory analyses.

The guidance document is organized as follows:

- Section 1 – Introduction
- Section 2 – Safety Guidance for Responding Agencies
- Section 3 – Hazardous Materials Disposal and Federal Notification
- Section 4 – Interaction Between Law Enforcement and The Department of Health
- Section 5 – The Department of Health Response
- Section 6 – The Department of Health Oversight of the Decontamination Process
- Section 7 – Appendices

Although the terms *property* or *residence* are used in this document, this guidance is applicable to the cleanup of any building interior used for residential purposes, including, but not limited to:

- Single family homes/residences
- Apartments
- Hotel/motel rooms.

The HDOH HEER Office emphasizes that dumping chemicals outside a residence may affect groundwater, drinking water supplies, surface water, and soil. If it is suspected or if there is evidence that chemicals or wastes were dumped outside the residence, the property owner should notify the HDOH HEER Office for additional guidance.

# Disclaimers

The HDOH hereby gives notice to all interested parties that the information in this document is for informational purposes only. Nothing contained in this document relieves any person from the responsibility of complying with the rules and regulations on Environmental Response or any other applicable federal, state, and local government requirements.

Mention of trade names or commercial products in this manual is not to be construed as an endorsement or recommendation by the HDOH.

This document is subject to change. The changes could reflect any such actions as:

- Updates from federal/state/local regulations or guidelines pertaining to CDL cleanup,
- Technological advances pertaining to CDL cleanup, or
- Other recognized changes pertaining to CDL cleanup

# Consistency with other DOH Guidance

The HEER Office has made every attempt, wherever possible, to maintain technical consistency with all other DOH programs in the State of Hawaii.

# Glossary

**Absorption**
Movement of one substance into another.

**Acid**
Substance which dissolves in water and releases hydrogen ions (H+). Acids cause irritation, burns, or more serious damage to tissue, depending on the strength and concentration.

**ACGIH**
American Conference of Governmental Industrial Hygienists.

**Acute Exposure**
Single exposure occurring in a short period of time causing an immediate noticeable symptom or effect.

**Air Lances**
Long, thin, high-pressure air piping, hose, and nozzle used to snake through ventilation systems to physically dislodge particulate contamination from ductwork.

**Air Purifying Respirator (APR)**
Device designed to protect the wearer from the inhalation of harmful atmospheres by removing the contaminants through a filtering media, but not capable of providing oxygen for the wearer's use.

**Air Registers**
Grated inlet or outlets to heating, ventilation, and air conditioning inlets and outlets.

**Anhydrous**
Compounds free of water.

**Aqueous**
Substances containing water or that are watery. An aqueous solution is any solution in which the solvent is water.

**Asphyxiant**
Vapor or gas which can cause unconsciousness or death by suffocation.

**Auto-ignition**
Minimum temperature to which a substance will initiate self-sustained combustion.

**Background Concentration**
The amount of a substance that may be present throughout an area due to environmental conditions.

**Base**
Corrosive material that reacts with acids to form a salt and water. A base has a pH greater than 7.

**Boiling Point**
Temperature at which a liquid changes to a vapor at a given pressure. Usually expressed in degrees Fahrenheit at 1 atmosphere pressure.

**Breakthrough**
When a hazardous material has completed its movement through an air purifying respirator system or protective clothing fabric, and is detectable on the inside.

**Buddy System**
System of organizing team members into groups in such a manner that each team member is designated to be observed by at least one other member of the team while in the clandestine laboratory site. The purpose of the buddy system is to provide rapid assistance to all team members in the event of an emergency.

**Carcinogen**
Substance that induces cancer from a chronic exposure.

**Case Agent**
Primary investigator assigned to the case and who has the responsibility of presenting the case to the prosecuting attorney.

**Catalyst**
Substance of which a small proportion notably affects the rate of reaction without itself being consumed or undergoing a net chemical change.

**Caustic**
Substance that strongly irritates, corrodes, or destroys living tissue.

**Certification**
Successful completion of an approved, 29CFR19010.120 hazardous waste operations and emergency response – HAZWOPER safety training program and 24-hours of on-the job training.

**Change Out Schedule**
Schedule to determine the amount of time a respirator canister or cartridge can be used before needing replacement.

**Chemical Hazard Assessment**
Written program developed and implemented by an employer which sets forth procedures, equipment, personal protective equipment, and work practices capable of protecting employees from hazardous chemicals used in the workplace.

**Chief Law Enforcement Officer (CLEO)**
Federal, state, or county law enforcement officer in charge of investigating methamphetamine manufacturing sites.

**Chronic Exposure**
Exposure which is recurrent or persists over an extended period of time.

**Clan**
Clandestine.

**Clandestine Drug Laboratory (CDL)**
Structure, vehicle, or container where narcotics or dangerous drugs, as defined by Hawaii Revised Statutes (HRS), are manufactured, purified, synthesized, reconstituted, or converted contrary to law.

A CDL is defined by the U.S. Drug Enforcement Administration (DEA) as "an illicit operation consisting of a sufficient combination of apparatus and chemicals that either has been or could be used in the manufacture or synthesis of controlled substances." CDLs can be found in private residences, motel and hotel rooms, apartments, house trailers, mobile trailers, commercial buildings, cars, boats, and outbuildings such as sheds or pole barns. They are often located in remote areas where telltale odors will not be detected, but they can also be found in multi-family dwellings and hotel or motel rooms where neighbors can be affected by chemical fumes and other contaminants.

The manufacture and use of illegal drugs results in the release of chemical precursors and the drug itself into the indoor air (for a list of these processes and chemicals involved, see Section 1.3 – Methamphetamine Lab Background). These chemicals settle out onto walls, floors, other surfaces, furniture, and personal belongings (for chemical hazards associated with meth labs, see Table 1-1). Chemicals can also be spilled or otherwise released onto surfaces. People who enter or live in former CDLs can be exposed to this contamination through breathing the air or touching contaminated surfaces. Small children may be at particular risk of exposure because they engage in behavior that will transfer contaminants from objects or their hands to their mouths where the chemicals are swallowed.

CDL apparatus, chemicals, or waste products may also be found in outdoor environments, either at sites where illicit drugs have been manufactured or at dump sites. The determination regarding whether the property is likely to be contaminated and whether it constitutes a human health hazard must be made on a case-by-case basis.

**Clandestine Laboratory Response Team (CLRT)**
Specially trained and equipped unit designated to respond to clan drug laboratories.

**Cleanup Contractor**
Private company hired to handle the decontamination and cleanup of a methamphetamine manufacturing site.

**Combustible**
Chemical property defined by having a flash point greater than 100° F and below 200°F.

**Combustible Gas/Oxygen Meter**
Instrument used to simultaneously detect flammable or explosive atmospheres and oxygen content in the air.

**Composite Sample**
The collection of samples taken from different locations that are combined and analyzed as a single sample. A methamphetamine or lead composite sample may consist of up to four sample locations (4 x 100 square centimeters [$cm^2$]).

**Compressed Gas**
Material or mixture which, when enclosed in a container, has an absolute pressure exceeding 40 pounds per square inch (psi) at 70°F or exceeding 140 psi at 130°F.

**Confined Space**
Space large enough and so configured that a person can bodily enter but which has limited access or egress, is not designed for human occupancy, and has limited ventilation – 29CFR19010.146.

**Confined Space Entry Permit**
Permit required to be posted whenever a confined space which may be hazardous to entrants is found. The permit lists authorized entrants, recognized hazards, and emergency information pertaining to the space, and is signed by the entry supervisor.

**Contamination**
Process of transferring a hazardous material from its source to people, animals, and the environment or equipment.

**Control Zones**
Areas associated with a clandestine laboratory which divide the site based on safety and degree of hazard.

**Corrosive**
Liquid or solid that causes visible destruction or irreversible alterations in human skin tissue or other substances.

**Criminalist**
For the purposes of this manual, a forensic scientist or chemist.

**Decontamination**
Process of removing or neutralizing contaminants from individuals and equipment.

**Department**
State Department of Health.

**Deposition**
Process by which contamination in the vapor or particulate form (such as methamphetamine and lead) deposits on walls and surfaces.

**Direct Reading Instruments**
Portable device that measures and displays the concentration of a contaminant or hazardous atmosphere in the environment.

**Disposition**
The location where wastes are finally deposited (e.g., as in a landfill, down the drain, or HAZMAT removals).

**Drug Enforcement Administration (DEA)**
Federal agency responsible for the enforcement of the controlled substances laws and regulations of the United States.

**Emergency**
Sudden and unexpected event calling for immediate action.

**Encapsulation**
The process of sealing contamination on walls and other surfaces in place using paint or other oil-based media.

**Environmental Hazard**
Condition capable of posing an unreasonable risk to air, water, soil quality, and to plants and wildlife.

**EPA Hazardous Waste Number**
Identification assigned by the US EPA to a hazardous waste, consisting of one letter and three numbers.

**EPA Identification Number**
12-digit number assigned by the US EPA or the State to hazardous waste generators, transporter facilities, and sites.

**EPIC**
El Paso Intelligence Center of the DEA.

**Equipment**
Non-chemical apparatus, glassware, jar, container, piping, or other material used in the methamphetamine manufacturing process.

**Explosive**
Substance that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

**Exposure**
Situation in which a person may ingest, inhale, absorb though skin or eyes, or otherwise come in physical contact with a hazardous substance.

**Exposure Limit**
Limit set to minimize employee exposure to a hazardous substance.

**Eye Protection**
Recommended safety glasses, goggles, or other headgear to be utilized when handling hazardous materials.

**Field Screening**
The use of field (as opposed to laboratory) instrumentation and chemical detection systems to identify the presence of contamination in the field (or house or residence), and to monitor the progress of decontamination efforts.

**"Fit for Use"**
Decontaminated residences that meet the cleanup criteria of this guidance are considered "fit for use" and may be re-inhabited after having been given a No Further Action from the HDOH HEER Office.

**Flame Ionization Detector (FID)**
A field-screening device used to detect volatile organic compounds (VOC) in air.

**Flammable**
Substance with a flash point less than 140°F.

**Flash Point**
Lowest temperature at which a liquid gives off enough flammable vapor to ignite and produce a flame when an ignition source is present.

**Gas**
Chemical in its gaseous state (such as anhydrous ammonia or hydrogen chloride), not to be confused with "gas," a common term for gasoline.

**Generator**
Person, company, or organization that produces hazardous waste subject to regulation.

**Granules**
Dry, coarse particles of some porous material.

**Gross Chemical Removal**
Removal of illegal laboratory equipment, paraphernalia, chemicals, etc., by law enforcement HAZMAT contractor.

**Guidance**
Department guidance document established by the hazard evaluation and emergency response office for the investigation, sampling, and cleanup of methamphetamine manufacturing sites.

**Halogenated Compounds**
Chemical compounds containing bromine, fluorine, chlorine, or iodine.

**Hazard Assessment**
Report that includes: (1) A description of the possible hazards found at a methamphetamine manufacturing site; (2) Diagrams of the methamphetamine manufacturing site; and (3) Lists of chemicals and equipment, any debris, trash, litter, or other signs of contamination.

**Hazard Assessment and Recognition Plan**
Form developed to track agent involvement in clan laboratory scenes that contains pertinent Information regarding the assessment of a scene. This form tracks responding personnel, assignments, hazardous assessment findings, lab assessment, medical treatment (if necessary), and chemical exposure (lf exposure occurs). This document is required for all clan meth sites as per 29 *Code of Federal Regulations* (CFR) 1910.120(b) (4).

**Hazardous**
Substance or combination of substances which, because of material concentration and/or physical, chemical, or infectious characteristics, may cause injury or death. Capable of posing an unreasonable risk to health and safety.

**Hazardous Chemical**
Gas, liquid, or solid chemical or drug that can pose a serious safety threat to an employee when improperly handled, packaged, or stored.

**Hazard Class**
Group of materials as designated by the Department of Transportation sharing a common major hazardous property.

**Hazard Communication Standard**
Right-to-know regulation that requires industrial users and processors of chemicals to warn their workers of hazards, conduct training in the safe handling of the materials, and make available information about chemicals included in the material safety data sheets. 29 CFR 1919.1200

**Hazard Evaluation**
Process of determining what risks are present at a site to employees, the public, and the environment.

**Hazard Warning System**
Words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which conveys the health hazards and physical hazards of substances in containers.

**Hazardous Materials (HAZMAT)**
Liquid, chemical, drug, or substance used in the manufacturing of methamphetamine that can pose a serious safety threat when improperly handled, packaged, or stored.

**Hazardous Materials Contractor**
Contractor responsible for removing hazardous materials from a methamphetamine manufacturing site.

**Hazardous Materials (Hazmat) Response Team**
Team that handles the cleanup of hazardous materials generated or left behind on a methamphetamine manufacturing site.

**Hazardous Waste**
Waste or combination of waste that has been identified by federal or state regulation to pose a risk to public health or the environment.

**HAZWOPER**
Hazardous Waste Operations and Emergency Response Standard set forth in 29 CFR 1910.120.

**The Hazard Evaluation and Emergency Response Office**
Designee of the State Department of Health who shall provide general oversight of decontamination of qualifying methamphetamine manufacturing sites.

**Heavily Contaminated areas**
Areas where high concentrations of contaminants are likely, such as the rooms where chemicals were used or cooked, or areas where chemicals were spilled.

**HEPA**
High-efficiency-particulate air. HEPA systems refers to filtration devices, including vacuum cleaners, designed to remove particulates from the air.

**illicit**
Illegal.

**Immediately Dangerous to Life and Health (IDLH)**
Condition that poses a threat of exposure to airborne contaminants likely to cause death or immediate or delayed permanent health effects, or prevention of escape from such an environment.

**Incompatible**
Term used to describe materials which could cause dangerous reactions if in direct contact with one another.

**Industrial Hygienist**
Individual trained in the practice of industrial health and safety including hazard recognition, measurement, evaluation, and methods of personal protection.

**Intermediate Products**
Substances apart from methamphetamines produced during any stage of the methamphetamine manufacturing process.

**Irritant**
Material that will cause an inflammatory response or reaction of the eyes, skin, or respiratory system.

**Laboratory Safety Certified**
Employee who has current certification from meeting the medical surveillance, classroom, and field work training requirements.

**Lethal Dose 50%**
Amount of a chemical administered to a population of organisms which will kill 50% of that population.

**Low-level Contaminated Areas**
Areas where low concentrations of contamination are likely, such as rooms located away from areas where chemicals were used, cooked, or spilled.

**Lower Explosive Limit**
Minimum amount of fuel in air creating an explosive atmosphere.

**Manufacturing**
Chemical or physical conversion of precursor chemicals into any form of methamphetamine.

**Material Safety Data Sheets (MSDS)**
Form, provided by manufacturers of chemicals, that conveys minimum information about chemical composition, physical and chemical properties, health and safety hazards, emergency response procedures, and waste disposal.

**Mechanical Agitators**
Long, thin, mechanical devices used to snake through ventilation systems to physically dislodge particulate contamination from ductwork.

**Melting Point**
Temperature at which a solid substance changes to a liquid state.

**Metals and Salt**
Refers to chemical substances containing toxic metals, including lead and mercury.

**Methamphetamine**
Synthetic stimulant drug which induces a strong feeling of euphoria and is highly psychologically addictive. Pure methamphetamine is a colorless crystalline solid, sold on the streets as glass, ice, or crystal. It is also sold as less pure crystalline powder called crank or speed, or in rock formation termed tweak, dope, or raw. Methamphetamine was first synthesized in 1919 in Japan by chemist A. Ogata.

**Methamphetamine Manufacturing Site**
A Methamphetamine Manufacturing Site, or Clandestine Drug Laboratory (CDL), is a site, structure, vehicle, or container where methamphetamine is manufactured, purified, synthesized, reconstituted, or converted. The Chief Law Enforcement Officer (CLEO) shall make the official determination/declaration as to the existence of a CDL.

**Methamphetamine Synthesis**
Methamphetamine is most structurally similar to methcathinone and amphetamine. When illicitly produced, it is commonly made by the reduction of ephedrine or pseudoephedrine. Most of the necessary chemicals are readily available in household products or over-the-counter cold or allergy medicines. Synthesis is relatively simple, but entails risk with flammable and corrosive chemicals, particularly the solvents used in extraction and purification. Clandestine production is therefore often discovered by fires and explosions caused by the improper handling of volatile or flammable solvents.

Most methods of illicit production involve hydrogenation of the hydroxyl group on the ephedrine or pseudoephedrine molecule. The most common method for small-scale methamphetamine labs in the United States is primarily called the HI/Red P (hydroiodic acid/red phosphorous), or "Red, White, and Blue Process", which involves red phosphorus, pseudoephedrine or ephedrine(white), and blue iodine, from which hydroiodic acid is formed. In Australia, criminal groups have been known to substitute 'red' phosphorus with either hypophosphorus acid or phosphorus acid.

This is a fairly dangerous process for amateur chemists, because phosphine gas, a side-product from in situ hydroiodic acid production, is extremely toxic to inhale. An increasingly common method called the “nazi dope method” uses the process of Birch reduction, in which metallic lithium (commonly extracted from rechargeable batteries) is substituted for metallic sodium, to circumvent the difficulty of procuring metallic sodium.

The Birch reduction, however, is dangerous because the alkali metal and liquid anhydrous ammonia are both extremely reactive, and the temperature of liquid ammonia makes it susceptible to explosive boiling when reactants are added. Anhydrous ammonia and lithium or sodium (Birch reduction) may be surpassing hydroiodic acid (catalytic hydrogenation) as the most common method of manufacturing methamphetamine in the US and possibly in Mexico. Hydroiodic acid "super lab busts" receive more media attention because the equipment employed is much more complex and visible than the glass jars or coffee carafes commonly used to produce methamphetamine with Birch reduction.

A completely different procedure of synthesis uses the reductive amination of phenylacetone with methylamine, both of which are currently DEA list I chemicals (as are pseudoephedrine and ephedrine). The reaction requires a catalyst that acts as a reducing agent, such as mercury-aluminum amalgam or platinum dioxide, also known as Adams' catalyst. This was once the preferred method of production by motorcycle gangs in California, until DEA restrictions on the chemicals have made this difficult. Other less common methods use other means of hydrogenation, such as hydrogen gas in the presence of a catalyst.

Methamphetamine labs can give off noxious fumes, such as phosphine gas, methylamine gas, solvent vapors; such as acetone or chloroform, iodine vapors, white phosphorus, anhydrous ammonia, hydrogen chloride/muriatic acid, hydrogen iodide, lithium/sodium metal, ether, or methamphetamine vapors. If performed by amateurs, manufacturing methamphetamine can be extremely dangerous. If the red phosphorus overheats, because of a lack of ventilation,

phosphine gas can be produced. This gas, if present in large quantities, is likely to explode upon autoignition from diphosphine, which is formed by overheating phosphorus.

**Mutagen**
Chemical capable of damaging chromosomes.

**Non-porous**
A hard, smooth surface that does not have “pores” which would allow accumulation of contamination.

**Odor Threshold**
Lowest concentration of a substance in air that can be detected by smell.

**On-Scene Supervisor**
Designee of the law enforcement agency in charge.

**OSHA**
Occupational Safety and Health Administration of the United States Department of Labor.

**OSHA Safety Standards**
OSHA standards as set forth in 29 CFR 1910.120 entitled "Hazardous waste operations and emergency response."

**Oxidizer**
Substance such as chlorate, permanganate, inorganic peroxide, or a nitrate that yields oxygen to increase the combustibility of organic matter.

**Oxygen Deficient**
Concentration by volume of oxygen below which atmosphere supplying respiratory protection (SCBA) must be provided. Location where the percentage of oxygen by volume is less than 19.5%.

**Penetration**
Movement of materials through closures (i.e., zippers, seams, flaps) of chemical protective clothing.

**Permeation**
Movement of materials on a molecular level through intact fabrics or barrier materials.

**Permissible Exposure Limit (PEL)**
An exposure limit that is published and enforced by OSHA as a legal standard. PEL may be either a time-weighted-average (TWA) exposure limit (8 hour), a 15-minute short term exposure limit (STEL), or a ceiling (C). The PELs are found in Tables Z-1,Z-2, or Z-3 of OSHA regulations 1910.1000.

**Personal Protective Equipment (PPE)**
Equipment designed to eliminate or minimize the exposure to hazardous materials.

**pH**
Value that indicates acidity or alkalinity of a solution or chemical.

**Photoionization Detector (PID)**
A field-screening device used to detect VOCs in air.

**Porous**
A surface that has “pores,” not necessarily visible to the naked eye, that are susceptible to the accumulation of contamination and/or liquids.

**Precursor**
Raw material or chemical which is essential to the production of a controlled substance and which becomes part of the finished product.

**Precursor Chemicals in Methamphetamine Production (Common)**
A precursor is a chemical that when combined with another chemical, results in a new product. The process of making methamphetamine starts with the precursor (ephedrine or pseudoephedrine), and other chemicals are added to produce the drug. Some of the most common precursor chemicals used in the manufacture of methamphetamine is:

Acetone
Alcohol (isopropyl or rubbing)
Anhydrous ammonia (fertilizer)
Ephedrine (cold medications)
Ether (engine starter)
Hydrochloric acid (pool supply)
Iodine (flakes or crystal)
Kitty litter
Lithium (batteries)
Methanol (gasoline additive)
MSM (nutritional supplement)
Pseudoephedrine (cold medications)
Red phosphorus (matches or road flares)
Salt (table or rock)
Sodium hydroxide (lye)
Sodium metal
Sulfuric acid (drain cleaner)
Toluene (brake cleaner)
Trichloroethane (gun cleaner)

**Qualified Person**
Person with specific training, knowledge, and experience in the area over which he/she has responsibility and authority to control (i.e., Site Safety Officer).

**Reaction**
Chemical transformation or change; the interaction of two or more substances to form new substances.

**Reagent**
Substance used in a reaction for the purpose of detecting, measuring, examining, or analyzing other substances.

**Remediate**
To clean up. A term used to describe the act of decontaminating a contaminated site.

**Residual Contamination**
Contamination at a site due to spilling of chemicals and/or deposition of chemicals through the air upon walls, floors, ceiling, ventilation, appliances, and other surfaces. Residual

contamination can have high concentrations where chemicals were spilled, or low concentrations due to deposition of chemicals via air movement.

**Representative Sample**
Chemical or substance in a liquid, solid, or gaseous state in sufficient quantity to be measured according to protocols based on widely accepted industry standards.

**Respond**
Remove, removal, remedy, or remedial action and any related terms including government enforcement activities related thereto.

**Responding Agency**
Federal, state, or county agency and its personnel that responds to a methamphetamine manufacturing site. Responding agencies may include the fire department, emergency medical services, environmental regulators, code enforcement officers, probation officers, public safety personnel, and child protective services.

**Rotary Brushes**
Long, thin piping, hose, and mechanical brushes rotated to snake through ventilation systems in order to dislodge particulate contamination from ductwork.

**Route of Exposure**
Manner in which a chemical contaminant enters the body (i.e., ingestion, inhalation, and absorption).

**Self-Contained Breathing Apparatus (SCBA)**
Respirator designed to protect the wearer from the inhalation of harmful atmospheres by providing a clean source of air carried by the wearer.

**Sensitizer**
Substance which on first exposure causes little or no reaction, but which on repeated exposure may cause a marked response, not necessarily limited to the contact site.

**Short-Term Exposure Limit (STEL)**
Maximum average concentration of an airborne contaminant allowed for a continuous, 15-minute exposure period.

**Site Safety Plan**
Written site-specific criteria that establish requirements for protecting the health and safety of responders during all activities at a clan lab.

**Scope of Work**
Assessment of the work necessary to decontaminate a methamphetamine manufacturing site.

**Site**
(1) Any real property, location, structure, vehicle, or container in or on which methamphetamine, precursor chemicals, or intermediate products are discovered or manufactured; and (2) delineated extent of contamination and all suitable areas in proximity to the contamination necessitating a response action.

**Site Safety Officer**
Person or employee responsible for the implementation of the site safety and health plan and for verifying compliance with applicable safety and health requirements under OSHA 29 CFR 1910.120(a)(3).

**Solid Material Suspected to Contain Drugs**
Powder, resin, lumpy material, or plant material usually found to contain controlled substances or abused drugs.

**Solvent**
Substance, usually a liquid, in which another substance is dissolved.

**SOP**
Standard Operating Procedures.

**Sorbent Tube**
For mercury analysis, a glass tube containing activated carbon that traps mercury from the air sample drawn by the sample pump. The sorbent tube is then analyzed for mercury content.

**Specific Gravity**
Weight of a material compared to the weight of an equal volume of water; an expression of the density (or heaviness) of a material.

**Summa® canisters**
Vacuum cylinders used to obtain VOC samples Toxic Organics-15. The method for using a Summa® canister to collect a VOC sample and subsequent laboratory analysis.

**Synthesis**
Formation of complex compounds by combining two or more chemicals.

**Teratogen**
Chemical capable of producing reproductive harm or birth defects.

**Threshold Limit Value (TLV)**
Airborne concentrations of substances devised by the ACGIH that represents conditions under which it is believed that nearly all workers may be exposed day after day with no adverse effect. TLV's are advisory exposure guidelines, not legal standards, that are based on evidence from industrial experience, animal studies, or human studies when they exist. There are three different types of TLV's: Time Weighted Average (TLV-TWA), Short Term Exposure Limit (TLV-STEL) and Ceiling (TLV-C).

**Time Weighted Average (TWA)**
Average concentration of a chemical in air over the total exposure time.

**Toxicity**
Capacity of a material to produce adverse health effects resulting from overexposure to the material.

**Unacceptable Substance**
Hazardous material for which handling, packaging, transportation, storage, or analysis is beyond the capability and resources of law enforcement personnel.

**Unapproved Container**
Bulk container containing any amount of chemicals used to manufacture or process drugs. Also includes any container or glass vial not meeting specifications of an approved container.

**Upper Explosive Limit (UEL)**
Maximum amount of fuel in air capable of creating an explosive atmosphere.

**Vapor**
Gas given off, with or without the aid of heat, by substances that under ordinary circumstances are liquids.

**Vapor Density**
The weight of a vapor or gas compared to the weight of an equal volume of air.

**Volatility**
Ability of chemicals to become a gas or vapor at relatively low temperatures.

**Water Reactive**
Substance which may spontaneously react or ignite when mixed with water.

**Western States Information Network (WSIN)**
Member of the Department of Justice's Regional Information Sharing Service (RISS) network.

**Wetting Agent**
Methanol for methamphetamine wipe samples, and 10% nitric acid for lead wipe samples. The gauze wipes are wetted with these chemicals before the wipe sample is collected.

**Wipe Sample**
Use of a wetted gauze wipe to sample walls, countertops, appliances, and other suitable surfaces.

**Volatilized**
Process by which liquid or solid chemicals are made airborne.

**VOC**
Volatile organic compounds. These compounds include solvents used in the manufacture of methamphetamine.

**XRF**
X-ray fluorescence. Field-screening instrumentation used to detect lead. Lead atoms "fluoresce" when exposed to X-rays. An XRF instrument can determine the concentration of lead in a wipe or vacuum sample, or in paint containing lead.

# Acronyms

ASTM ..... American Society for Testing and Materials

CA ..... Consent Agreement

CDL ..... Clandestine drug laboratory

CDLP ..... Clandestine Drug Laboratory Program

CDPHE ..... Colorado Department of Public Health and Environment

CFR ..... Code of Federal Regulations

CIH ..... Certified Industrial Hygienist

Clan ..... Clandestine

CLP ..... Contract Lab Program

CLEO ..... Chief Law Enforcement Officer

CLRT ..... Clandestine Laboratory Response Team

cm2 ..... Square centimeter

COC ..... Contaminant of Concern

COPS ..... Community Oriented Policing Services

DE ..... Decontamination Equipment

DEA ..... United States Drug Enforcement Administration

DHS ..... Department of Human Services

DOH ..... Department of Health

DQA ..... Data Quality Assessment

DQO ..... Data Quality Objective

EAL ..... Environmental Action Level

EMS ..... Emergency medical services

EPIC ..... El Paso Intelligence Center

EPA ..... .Environmental Protection Agency

FSP ..... Field Sampling Plan

FY ..... Fiscal year

GC ..... Gas Chromatography

HAR ..... Hawaii Administrative Rules

HARP ..... Hazard Assessment and Recognition Plan

HASP ..... Health and Safety Plan

Hazmat ..... Hazardous materials

HAZWOPER ..... Hazardous Waste Operations and Emergency Response

HDOH ..... State of Hawaii Department of Health

HEER ..... Hazard Evaluation and Emergency Response

HERL ..... Hawaii Environmental Response Law

HI ..... Hazard Index

HI/Red P ..... Hydriodic Acid/Red Phosphorous

HRS ..... Hawaii Revised Statutes

HSP ..... Health and Safety Plan

HVAC ..... Heating, ventilation, and air conditioning

MCL ..... Maximum Contaminant Level

MCLG ..... Maximum Contaminant Level Goal

Meth ..... Methamphetamine

mg/kg ..... Milligrams per kilogram

mg/m3 ..... Milligrams per cubic meter

MS ..... Mass Spectrometry

ND ..... Non Detect

NFA ..... No Further Action

NIOSH ..... National Institute for Occupational Safety and Health

NRC ..... National Response Center

OSHA ..... Occupational Safety and Health Administration

P2P ..... Phenyl-2-propanone

PAL ..... Preliminary Action Level

PCP ..... Pentachlorophenol

PE..... Performance Evaluation

PID..... Photoionization detector

PPE ..... Personal Protection Equipment

Ppm ..... Parts per million

PRP ..... Potentially Responsible Party

QA ..... Quality Assurance

QAPP ..... Quality Assurance Project Plan

QC ..... Quality Control

RI..... Remedial Investigation

RQ ..... Reportable Quantities

SAP ..... Sample and Analysis Plan

SCP ..... State Contingency Plan

SOP ..... Standard operation procedures

SOSC ..... State On-Scene Coordinator

SSO..... Site safety officer

TCLP ..... Toxicity Characteristic Leachate Procedure

TGM..... Technical Guidance Manual

URL ..... Uniform Resource Locator

VOC ..... Volatile Organic Compound

WSIN ..... Western State Information Network

WP..... Work Plan

XRF ..... X-Ray Fluorescence

µg/L..... Micrograms per liter

µg/ft2..... Micrograms per square foot

# SECTION 1

# INTRODUCTION

# SECTION 1: INTRODUCTION

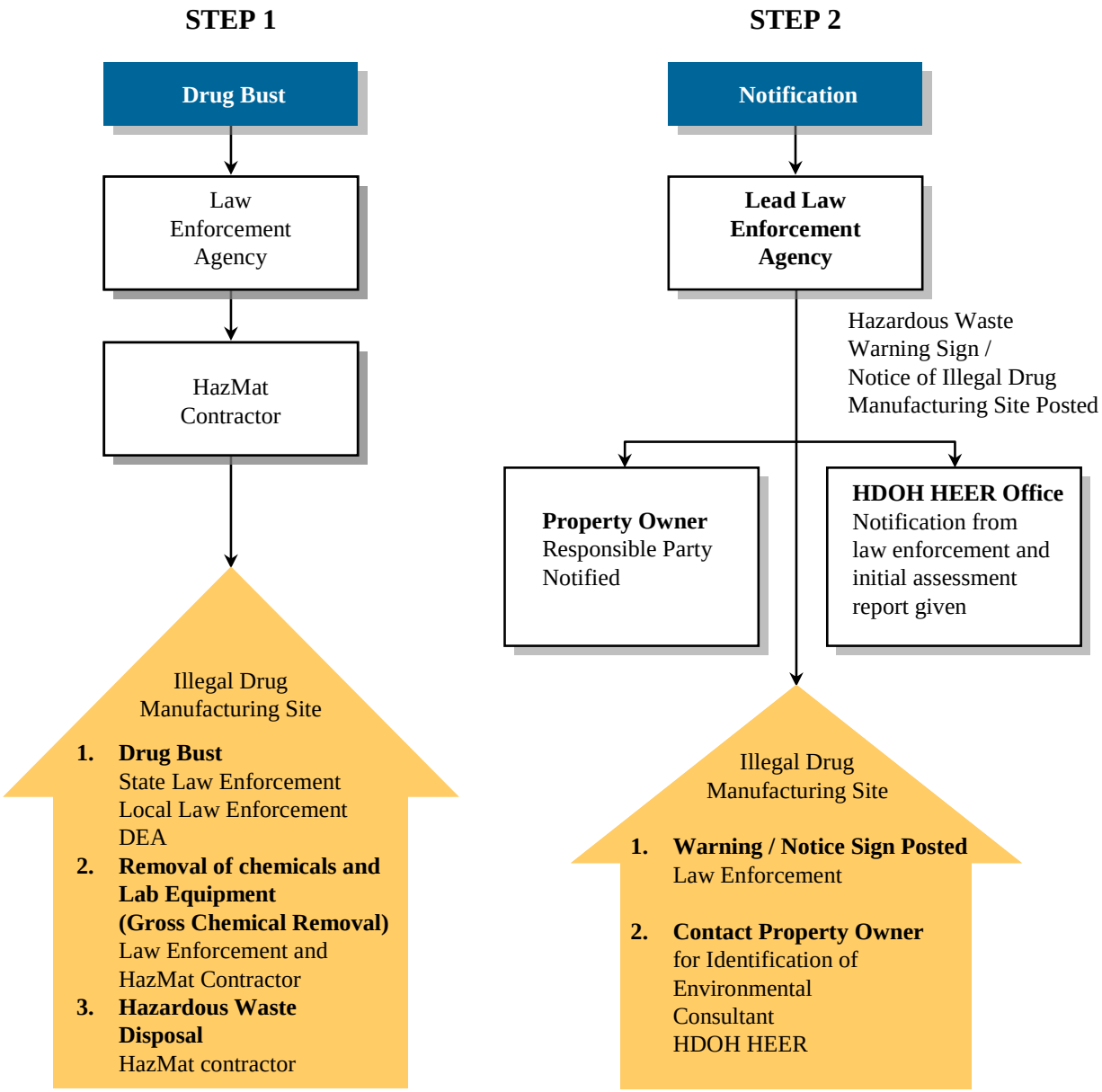
## 1.1 General

The purpose of this manual is to provide procedural and technical guidance to law enforcement agencies, the owners/operators of contaminated property, and to Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office personnel to address hazardous substance releases in Hawaii in accordance with the terms of Chapter 452 of Title 11, Hawaii Administrative Rules, entitled “Requirements for Decontamination and Cleanup of Methamphetamine Manufacturing Sites.”

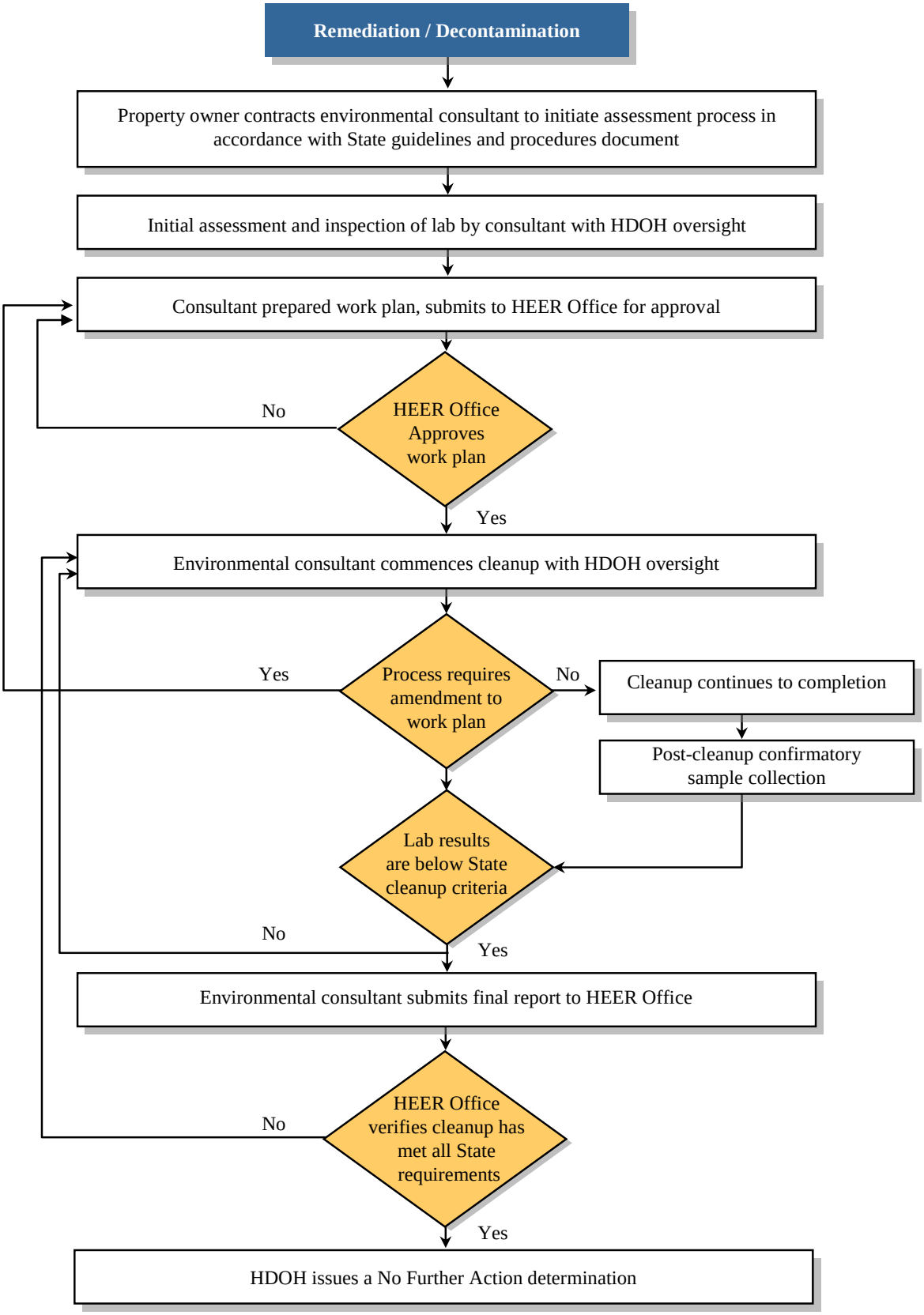
This manual is organized in a manner that will provide step-by-step guidance throughout the response and/or remedial process. Refer to Figure 1-1 for an overview of the notification, decontamination, and cleanup process. Guidance in this manual is directed to law enforcement agencies, owners/operators of contaminated property, their contractors, and HDOH HEER Office employees. Although the process is similar for addressing all hazardous substance releases, the size, type, and location of the lab determines the scope of the response. Intent is to make the scope of the response action commensurate with the magnitude and complexity of the problem to be addressed.

# Figure 1-1

# Clandestine Drug Lab Remediation Process Flowchart



**STEP 3**


Remediation / Decontamination
Property owner contracts environmental consultant to initiate assessment process in accordance with State guidelines and procedures document
Initial assessment and inspection of lab by consultant with HDOH oversight
Consultant prepared work plan, submits to HEER Office for approval
HEER Office Approves work plan
No
Yes
Environmental consultant commences cleanup with HDOH oversight
Process requires amendment to work plan
Yes
No
Cleanup continues to completion
Post-cleanup confirmatory sample collection
Lab results are below State cleanup criteria
No
Yes
Environmental consultant submits final report to HEER Office
HEER Office verifies cleanup has met all State requirements
No
Yes
HDOH issues a No Further Action determination

## 1.2 Legislative Background

The State Legislature and the HDOH HEER Office recognize that the contamination of any properties located in the State of Hawaii used to illegally manufacture or store methamphetamine poses a threat to public health and welfare, the environment, and the health of the State's first responder community. This rule provides for the proper and efficient decontamination and remediation of such properties in order to facilitate safe reoccupation and reuse.

Currently, "Requirements for Decontamination and Cleanup of Methamphetamine Manufacturing Sites," addresses emergency and long-term decontamination and cleanup of properties that have been used to illegally manufacture or store methamphetamine and its precursor hazardous materials. As set forth under Chapter 452 of Title 11, Hawaii Administrative Rules, this rule is being proposed by the HDOH to establish permanent requirements for the proper identification, investigation, decontamination, and cleanup of such properties, and to establish a protocol for the protection of first responders, to be adopted on or before December 31, 2007.

The HDOH has developed this technical guidance document (based on Chapter 452 of Title 11, Hawaii Administrative Rules) with provisions governing the interaction between the HDOH HEER Office and federal, state, and county law enforcement agencies during illegal methamphetamine manufacturing site decontamination and cleanup procedures, and provisions for HDOH HEER Office oversight of hired private cleanup contractors through the duration of the site remediation process.

The comprehensive statewide program proposed by the HDOH in the rule includes, but is not limited to, the following: site emergency response and inspection; first responder personal safety protection; responding agency training and certification; hazardous materials disposal; reporting and notification, including federal agency and property owner notice; approved decontamination and environmental cleanup planning; indoor and outdoor sampling; post-decontamination processes; final reporting; and determination of no further action by the Department.

## 1.3 Methamphetamine Lab Background

This section provides information regarding the methods and chemicals typically used to produce methamphetamine and the general hazards and concerns associated with residual contamination found at an illegal meth lab.

### 1.3.1 Methamphetamine Manufacturing in Hawaii

Three main methods are used to manufacture methamphetamine: red phosphorus, birch, and amalgam or P2P methods. While variations of these methods can be used, the red phosphorus and birch methods are the main cooking methods and are the only two methods that have been found in Hawaii. The following sections provide a brief overview of the chemicals or precursors used and wastes generated by each method. Several of the listed chemicals are commonly used in household products but are not generally stored in the quantities required to manufacture illegal drugs.

During 2008, Federal agencies seized 54.4 kilograms of methamphetamine in Hawaii. (Drug Enforcement Administration, Hawaii State Factsheet, 2008)

According to the Drug Enforcement Administration, there were 0 methamphetamine lab incidents in Hawaii during 2008. This includes all meth incidents, including labs, dumpsites, and/or chemical and glassware seizures.

#### 1.3.1.1 Red Phosphorus Method

The red phosphorus method is also called the Red P; HI; or Red, White, and Blue method. Chemicals commonly associated with this method include hydriodic acid (HI), hydrochloric (muriatic) acid, sulfuric acid, sodium hydroxide (lye), sodium chloride (salt), red phosphorus, iodine, isopropyl alcohol, ethyl alcohol (ethanol), methyl alcohol (methanol), hydrogen peroxide, naphtha (Coleman fuel), charcoal lighter fluid (mineral spirits and petroleum distillate), acetone, benzene, toluene, ethyl ether (starting fluid), Freon, hydrogen chloride gas, and chloroform. Other chemicals that may be used include acetic acid, methyl ethyl ketone (MEK), and hypophosphorus acid. Wastes generated during manufacturing include potentially flammable extraction process sludges, phosphine gas, HI, hydrogen chloride gas, phosphoric acid, and yellow or white phosphorus.

| Red Phosphorus Lab Profile | |
|---|---|
| Precursor: | Ephedrine or Pseudoephedrine |
| Product: | d-Methamphetamine |
| Method: | Ephedrine reduction using red phosphorus and hydriodic acid |
| Other Names: | "Red P" Lab, "Tweaker" Lab, "HI" Lab or "Mexican National" Lab |
| Unique Hazards: | Phosphine gas production |
| | Conversion of red phosphorus to white phosphorus |
| | Use of acid gas generators |
| | Exothermic/incompatible reaction of red phosphorus |
| | Iodine vapors |
| Variations: | Use iodine and water instead of hydriodic acid |
| | Use hypophosphorus acid instead of red phosphorus |
| | Use liquid from tablet extraction directly in reflux step |

#### 1.3.1.2 Birch Method

The birch method, also called the Ammonia or Nazi method, is reportedly not as common in Hawaii as the red phosphorus method. This method relies on a supply of anhydrous ammonia that is most commonly found in commercial freezers and agricultural applications. Chemicals associated with this method include anhydrous ammonia, lithium metal, sodium metal, isopropyl alcohol, ethyl alcohol (ethanol), methyl alcohol (methanol), hydrogen chloride gas, hydrochloric (muriatic) acid, sulfuric acid, sodium chloride (salt), toluene, naphtha, Freon, ethyl ether, chloroform, and MEK. Wastes generated during manufacturing include potentially flammable extraction process sludges and hydrogen chloride gas.

| Ammonia Lab Profile | |
|---|---|
| Precursor: | Ephedrine or Pseudoephedrine |
| Product: | d-Methamphetamine |
| Method: | Ephedrine reduction using anhydrous ammonia and lithium, sodium metal or elemental potassium |
| Other Names: | "Lithium-Ammonia" Lab, "Birch Reduction" Lab, "Nazi" Lab or "Sodium Metal" Lab |
| Unique Hazards: | Sodium metal from molten sodium hydroxide flammability |
| | Irritant toxicity hazard from concentrated ammonia atmospheres |
| | Reaction of water with sodium or lithium metals |
| | Use of acid gas generators |
| Variations: | Use of an acetone/dry ice bath to keep original anhydrous ammonia mixture from evaporating prematurely |
| | Recovery of lithium ribbon from camera batteries |

#### 1.3.1.3 Amalgam, or P2P Method

The third method used to produce methamphetamine is known as the amalgam or P2P method. This method uses phenyl-2-propanone (P2P) and methylamine as precursors. Mercuric chloride, lead acetate, and many other chemicals are used in the synthesis of methamphetamine via the amalgam method. This cooking method can result in lead and mercury contamination, but it is the least common method because of the limited availability of the precursor since it became regulated, the length of time needed to produce the desired drug, low yield, and low concentration of the finished product.

| P2P Lab Profile | |
|---|---|
| Precursor: | Phenyl-2-Propanone |
| Product: | Mixtures of l-Methamphetamine (50%) and d-Methamphetamine (50%) |
| Method: | P2P reduction using methylamine and mercuric chloride |
| Other Names: | "Amalgam" Lab, "Prope Dope" Lab or "Biker" Lab |
| Unique Hazards: | Methylamine could cause severe eye and skin irritation and may cause blindness, flammable in high concentrations, a skin absorbent and a central nervous system (CNS) toxicant |
| | Lead acetate |
| | Use of highly toxic mercuric chloride |
| | Use of acid gas generators |
| | Occasional use of methylamine compressed gas cylinders |
| Variations: | Acidify the oil layer directly (i.e., delete solvent washing step) |

#### 1.3.1.4 Shake 'n Bake, or One Pot Method

In recent years, reports of a simplified "Shake 'n Bake" synthesis have surfaced. The method is suitable for such small batches that pseudoephedrine restrictions are less effective, it uses chemicals that are easier to obtain (though no less dangerous than traditional methods), and it is so easy to carry out that some addicts have made the drug while driving. Producing meth in this fashion can be extremely dangerous and has been linked to several fatalities. This method uses a two-liter soda bottle filled with chemicals such as ammonium nitrate, lithium metal, ether, and sodium hydroxide – a lethal combination of chemicals capable of exploding and creating massive flash fires.

## 1.3.2 Hazards Associated with Clandestine Laboratories

Most chemicals used to produce illicit methamphetamine fall within three categories: solvents, metals and salts, and corrosives (i.e., strong acids and bases). Each category has similar toxic and physical properties. Risk of injury from chemical exposure may occur depending on the toxic properties of the chemicals, the physical state (i.e., liquid, gas, or solid), the concentration, and the duration and route of exposure. Most people are aware that skin contact with a strong acid or base can result in injury to the body. However, some people may not be aware that exposure to low or moderate levels of some chemicals over a long period may result in absorption by the body, which can lead to other health effects.

Absorption of chemicals by the body may occur through one or more of the following routes of exposure:

- Inhalation (respiratory)
- Skin or dermal exposure (via direct contact with the skin)
- Ingestion
- Injection (via skin puncture with a needle or other sharp object).

The chemicals classified as solvents or corrosives may exist as gases or liquids and thereby produce the greatest potential for inhalation exposure. Chemical substances in the form of fine powders or particulates also pose an inhalation hazard if environmental factors such as air movement keep them suspended in the air.

The final methamphetamine product has considerable potential for adverse effects on the drug user. Toxic properties of the drug include agitation, psychosis, seizures, respiratory arrest, and death. In addition, drugs produced in clandestine laboratories contain numerous contaminants and byproducts that do not have predictable effects on the drug user. However, impurities found in some drugs produced in clandestine laboratories have resulted in severe and permanent neurological disability following intravenous injection. Injury to the liver, kidneys, brain, nerves, and respiratory systems is commonly seen in drug users.

After removal of the illicit laboratory equipment and chemicals, residual amounts of some chemical substances may persist on building surfaces and furnishings as a result of spills during methamphetamine production and deposition of volatilized contaminants. Until the residual contamination is completely removed, exposure to it poses a health risk to building occupants where the laboratory was located. Exposure for an extended period of time (months to years to lifetime) is known as chronic exposure. Not much is known regarding the chronic health effects from methamphetamine laboratories. However, there is scientific evidence that the chemicals used to manufacture methamphetamine can cause a variety of health effects, including cancer, brain/nervous system injury, injury to the liver and kidneys, birth defects, and reproductive disorders (MDOH 2003). Table 1-1 lists the physical and health hazards posed by some of the chemicals found at illicit meth labs.

The potential for exposure to meth lab residues on surfaces and porous articles (e.g., furnishings) depends on (MDOH 2003):

- Accessibility of residues and frequency of direct contact: The likely use of a contaminated area is an important factor in estimating frequency of contact. For

example, residues in a kitchen or bathroom of a house will likely be contacted more frequently than residues in a garage.

- Ability of volatile residues to become airborne: For example, residues in ventilation systems may be dispersed throughout a residence.
- Characteristics of the inhabitants or users of the contaminated site: For example, toddlers who crawl on contaminated carpet or floors will have high frequency of contact with toxic residues over a considerable area of skin. These residues may directly irritate the skin and/or be absorbed into the body through the skin. In addition, hand-to-mouth behavior exhibited by young children will allow chemicals to be ingested into the body. Hand-to-eye behavior can introduce toxic materials to the eyes. Although all people exhibit these behaviors, infants and toddlers are at greatest risk.

## TABLE 1-1

## CHEMICAL HAZARDS ASSOCIATED WITH ILLEGAL METHAMPHETAMINE LABORATORIES

| Typical Chemicals Found in Lab Sites | Common Legitimate Uses | Poison | Flammable | Toxic Vapors | Explosive | Corrosive | Skin Absorption | Common Health Hazards |
|---|---|---|---|---|---|---|---|---|
| Acetone | Fingernail polish remover, solvents | X | X | X | | | X | Reproductive disorders |
| Methanol | Brake Cleaner fluid, fuel | X | X | X | | | X | Blindness, eye damage |
| Ammonia | Disinfectants | X | | X | | X | X | Blistering, lung damage |
| Benzene | Dye, varnishes, lacquers | X | X | | X | X | X | Carcinogen, Leukemia |
| Ether | Starters fluid, anesthetic | X | X | | X | | | Respiratory Failure |
| Freon | Refrigerant, propellants | X | | X | | X | | Frostbite, Lung damage |
| Hydriodic Acid | Driveway cleaner | X | | X | | X | X | Burns, Thyroid Damage |
| Hydrochloric Acid(HCL Gas) | Iron ore processing, mining | X | | X | | X | X | Respiratory, Liver Damage |
| Iodine Crystals | Antiseptic, Catalyst | X | X | | X | X | | Birth Defects, Kidney Failure |
| Lithium Metal | Lithium batteries | X | | | | X | X | Burns, Pulmonary Edema |
| Muriatic Acid | Swimming pool cleaners | X | | X | | X | | Burns, Toxic Vapors |
| Phosphine Gas | Pesticides | X | | X | | | X | Respiratory Failure |
| Pseudoephedrine | Cold medicines | X | | | | | | Abuse: Heart Damage |
| Red Phosphorus | Matches, fireworks | X | X | X | X | | | Unstable, Flammable |

**TABLE 1-1 (Continued)**

**CHEMICAL HAZARDS ASSOCIATED WITH ILLEGAL METHAMPHETAMINE LABORATORIES**

| Typical Chemicals Found in Lab Sites | Common Legitimate Uses | Poison | Flammable | Toxic Vapors | Explosive | Corrosive | Skin Absorption | Common Health Hazards |
|---|---|---|---|---|---|---|---|---|
| Sodium Hydroxide | Drain cleaners, lye | X | | X | | X | X | Burns, Skin Ulcers |
| Sulfuric Acid | Battery Acid | X | | X | | X | X | Burns, Thyroid Damage |
| Toluene | Paint, thinners, solvents | X | X | X | X | | X | Fetal Damage, Pneumonia |
| Liquid Lab Waste | None | X | X | X | X | X | X | Unknown long term effects |

However, if appropriate decontamination procedures are followed, buildings can be reoccupied, because there is no scientific evidence to suggest continuing human health risk after thorough decontamination.

## 1.4 Application

The HDOH HEER Office shall provide general oversight for the decontamination of an illegal methamphetamine manufacturing site, or clandestine drug lab (CDL), upon referral by the chief law enforcement officer (CLEO) in charge of investigating clandestine activities occurring on the property.

Prior to commencement of remediation activities, the HEER Office shall approve the work plan (WP), field sampling plan (FSP), quality assurance project plan (QAPP) and hazard assessment and recognition plan (HARP)/health and safety plan (HASP) submitted by the cleanup contractor(s) hired by the responsible party to conduct the decontamination and sampling procedures for the site for which the work plan was submitted. All costs associated with the cleanup and decontamination of a methamphetamine manufacturing site shall be the responsibility of the property owner. Prior to issuance of a no further action determination, the HEER Office shall confirm that each remediation process has been completed according to the approved work plan, and that all samples taken are below state-established levels of contamination.

Internally, the HEER Office will be the primary division charged with administration of the rule, and any inter-division cooperation within the HDOH shall be at the HDOH's discretion.

## 1.5 Legal Authority

The proposed rule governing illegal methamphetamine manufacturing site decontamination and cleanup has been mandated by the State Legislature (Act 170). Hawaii Administrative Rules, Title 11, Chapter 452, entitled "Requirements for the Decontamination and Cleanup of Methamphetamine Manufacturing Sites" was adopted by the State Legislature in December of 2008. The adoption of this rule replaces the interim HDOH guidelines and procedures, and is supplemented by the revised Department methamphetamine manufacturing site decontamination guidance document. Adoption of the proposed rule grants the HDOH authority

to determine acceptable levels of CDL decontamination and cleanup based on widely accepted industry standards. This rule establishes minimum personnel health and safety requirements that must be met prior to HDOH authorization of decontamination procedures proposed by retained cleanup contractors and the first responder community. Adoption of this rule establishes minimum sampling and cleanup requirements for indoor and outdoor environmental site contamination stemming from methamphetamine manufacture and storage. The HDOH and other state agencies may not recognize independent property remedial actions conducted outside of this rule as satisfactory for a state determination of no further action.

The rule provides affected site owners and managers an administrative avenue to attain a determination of no further action from the HDOH, declaring a previously hazardous property safe for reoccupation and reuse. This rule is exclusive to sites contaminated by methamphetamine manufacture and storage, providing eligible parties a practicable remedial action alternative to the general remedial actions currently available under existing Hawaii contaminated property remediation laws. This technical guidance document provides affected site owners and managers the procedural guidelines to follow (based on Chapter 452 of Title 11, Hawaii Administrative Rules) in order to satisfy a determination of no further action from the HDOH HEER Office.

## 1.6 Liability

Liability under Chapter 452 of Title 11, Hawaii Administrative Rules associated with the reconsideration and reassessment of the decontamination and cleanup of a methamphetamine manufacturing site shall be the sole responsibility of the owner of the property on which a methamphetamine manufacturing site is located.

## 1.7 Cost Recovery

The HDOH is authorized under Section §11-452-39 and Section §11-452-43(3) under Chapter 452 of Title 11, Hawaii Administrative Rules to recover all costs associated with the reconsideration and reassessment of the decontamination and cleanup of a methamphetamine manufacturing site. These costs shall be the responsibility of the owner of the property on which a methamphetamine manufacturing site is located.

## 1.8 Administrative Record

When issuing an order or selecting a response action, DOH shall base the order or decision on the documents contained in an administrative record. The administrative record forms the basis for issuing an order and for the selection of a response action. If sufficient time does not exist prior to conducting a response action, the administrative record will be completed following the action.

# SECTION 2

# SAFETY GUIDANCE FOR RESPONDING AGENCIES

# SECTION 2: SAFETY GUIDANCE FOR RESPONDING AGENCIES

## 2.1 Introduction

Investigations and eventual cleanup of these clan meth laboratories must meet special requirements because these sites pose significant health risks to the public safety personnel who may be exposed to them. Occupational Safety and Health Administration (OSHA) and certain other federal and state guidelines relating to clan laboratories must be followed.

## 2.2 Purpose

The purpose of this technical guidance document is to detail the procedural requirements set up by the State concerning occupational safety and health of all responding agencies. This document does not attempt to restate local protocols established by various police departments throughout the State of Hawaii for managing enforcement activities associated with illegal clan meth laboratories. Its authors recognize the priority of local enforcement agencies to establish and implement these standards. Moreover, we understand that these local protocols are shared and well known among the various agencies, and that practice in the field is well established among the personnel within each agency. Thus, local, agency-specific procedures may be applied if these are equally or more protective than the guidance procedures described in this manual.

## 2.3 Personal Safety Guidance

Each responding agency shall be responsible for the safety of any of the agency's personnel involved in the investigation of a methamphetamine manufacturing site. Guidelines for the protection of such personnel shall be developed by each respective agency in accordance with OSHA safety standards.

Each responding agency shall be responsible for the following (Examples of these requirements in the form of a safety program guideline can be found in Appendix V):

- The designation of at least one individual who shall be responsible for the overall management, integration, and coordination of personal safety procedures during the investigation of methamphetamine manufacturing sites.
- The designation of a site safety officer (SSO).
- Compliance with the OSHA guidelines for medical surveillance as set forth in 29 CFR 1910.120(f). (See Appendix VI – Suggested Guidelines for Medical Certification, Appendix VII – Suggested Letter to Physician, and Appendix VIII – Example Chemical Exposure Report) http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765
- Compliance with the OSHA guidelines for respiratory protection as set forth in 29 CFR 1910.134. (See Appendix IX- OSHA Respirator Medical Evaluation Questionnaire) http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716
- Compliance with the OSHA guidelines for confined space entry as set forth in 29 CFR 1910.146.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9797

- Compliance with the OSHA guidelines for chemical hazardous communication as set forth in 29 CFR 1910.1200. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099
- Compliance with the OSHA guidelines for decontamination as set forth in 29 CFR 1910.120(k). http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=9765
- Compliance with the OSHA guidelines for personal protective equipment as set forth in 29 CFR 1910.132. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9777)
- Compliance with the OSHA guidelines for bloodborne pathogens as set forth in 29 CFR 1910.1030 http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10051
- Maintenance of a completed Hazard Assessment and Response Plan (HARP) or Site-Specific Health and Safety Plan on site at all times. (See Appendix X – Example Health and Safety Plan)
- Maintenance of all general safety equipment (including but not limited to PPE, decontamination, and air monitoring equipment) used in responding to a methamphetamine manufacturing site.
- Maintenance of equipment on its premises in a serviceable condition at all times in accordance with the manufacturers' recommendations and OSHA guidelines.
- Assurance that any planning, assessment, processing, exit, and decontamination operational phases comply with OSHA safety standards.
- Training and certification of its personnel in the detection, investigation, and dismantling of a methamphetamine manufacturing site.
- Maintenance of a record of training and certification of its personnel.

# SECTION 3

# HAZARDOUS MATERIALS DISPOSAL AND FEDERAL NOTIFICATION

# SECTION 3: HAZARDOUS MATERIALS DISPOSAL AND FEDERAL NOTIFICATION

## 3.1 Introduction

HDOH and the United States Environmental Protection Agency (USEPA) regulations require the responding agency to ensure that all hazardous waste materials are safely removed from the site when a federal, state, or local agency seizes a CDL. To satisfy these regulations, the DEA's Hazardous Waste Disposal Program was designed to assist DEA's Special Agents in management of the chemicals, waste, and contaminated equipment seized at CDLs. This program promotes the safety of law enforcement personnel and the public by using qualified companies with specialized training and equipment to remove hazardous waste seized at CDLs. These hazardous materials contractors now provide response services to DEA, as well as state and local law enforcement officials nationwide. If a DEA hazardous materials contractor cannot be provided, the responding agency is responsible to identify a comparable hazardous materials contractor to ensure that all hazardous waste materials are safely removed from the site.

## 3.2 Hazardous Material Disposal

If the DEA participates in the investigation and decontamination of a CDL, the DEA may coordinate with a hazardous materials contractor for the disposal of any hazardous materials discovered during a response to a CDL.

If the DEA does not participate in the investigation and decontamination of a CDL, the CLEO shall coordinate with a hazardous materials contractor for the disposal of any hazardous materials. The hazardous materials contractor shall prepare a disposal record that shall include, but not be limited to, the hazardous waste manifest, or an inventory of the following:

- Hazardous materials
- Precursor chemicals
- Intermediate products
- Equipment used or stored at the methamphetamine manufacturing site.

The disposal record shall be included in the case file for the investigation and shall be delivered to the HEER Office.

## 3.3 Protocol for Using DEA Contractor

Specific DEA Hazardous Waste Cleanup and Disposal Contract requirements and certain federal regulations establish the procedures under which services must be performed by the DEA Contractor. Below is a summary of those procedures and how a state/local agency may utilize the services of the DEA Contractor. Failure to fully comply may result in violations to environmental laws, for which the state/local agency may become liable, and for fiscal responsibility that otherwise would be borne by DEA for the contractual services.

EPA regulations define a "Generator" of hazardous waste as "any person, by site, whose act or process produces hazardous waste identified or listed in [the hazardous waste regulations], or whose act first causes a hazardous waste to become subject to regulation." As a result, a state/local law enforcement agency that seizes a clandestine drug laboratory becomes the

generator at that site. Use of the DEA Contract is simply a mechanism by which the state/local agency may comply with the generator standards and is in no way transference of that responsibility to DEA or the DEA Contractor. State/local agencies are responsible for full compliance with the generator standards. The information needed and the procedures used for obtaining a DEA hazardous waste and disposal contractor will be similar to obtaining a local hazardous waste and disposal contractor not via the DEA contract.

## BEFORE

1. The DEA Point-of-Contact (POC) must call DEA Headquarters (HQ) before calling the contractor. (State/local agencies must call their local DEA office to initiate use of the DEA Contractor.)
2. The DEA POC will assign a DEA Case Number or "S" number for state/local cleanups.
3. The DEA POC will obtain funding authorization from DEA HQ.
4. The DEA POC will provide the DEA Contractor with the funding authorization numbers.
5. The El Paso Intelligence Center (EPIC) Form 143 (DEA 612) (see Appendix XI and Appendix XII must be completed for each cleanup by the responsible agency.
6. Parts I and II of the National Clandestine Drug Laboratory Cleanup Program (NCLCP) Form (see Appendix XX) must be completed for each cleanup by the responsible agency.
7. The DEA POC will determine the "lead agency" (generator) by name and address.
8. For state/local seizures, DEA is not the "lead agency."
9. The DEA POC will advise the DEA Contractor of the name/address of the "lead agency" (generator).
10. Early call-out during the Tactical Operation Planning Meeting is OK if necessary to reduce prolonged wait-time on site.
11. If a Case Number or an "S" Number is not available at the time of the request for funding authorization, a General File Number may be used (e.g., for DEA-Only, IE-05-9121, or for State/local, IE-05-S921).

## DURING

1. FIRST, talk with the DEA Contractor regarding the Site Safety Plan—Contractor must document this OSHA requirement.
2. At Site Safety Meeting, Contractor should enter "lead agency" in Box 3 of Manifest.
3. If state/local cleanup, list that agency; if DEA, list DEA, Office of Forensic Sciences (SFH), Washington, DC 20537.
4. Determine at Site Safety Meeting who will sign the manifest (see below).
5. PPE must be worn by all personnel in the "Hot Zone."
6. Law enforcement must provide security for contract personnel at all times. The contractor will leave if law enforcement leaves, and will leave the waste at the site.
7. A receipt for services must be completed and signed by a non-contract employee. The receipt for services (DEA Form 602, provided by the contractor) is independent

verification of the labor hours of contract personnel at the site, and the number of containers removed from the site. The number of containers on the vehicle and listed on the manifest must agree with the number of containers removed from the site shown on the receipt for services.

8. The DEA Contract does not provide for, and will not pay for, cleanup of residual contamination. Contaminated soil or interiors of buildings are not part of the DEA Contract (see After protocol).
9. The DEA Contractor may sign the manifest on behalf of DEA for DEA-Only cleanups. A representative must sign the manifest "on behalf of' his/her agency for state/local cleanups.
10. The site must be posted with a warning sign (Appendix XXI).

**AFTER**

1. The completed EPIC Form must be faxed to EPIC at (915) 760-2913.
2. Part III of the NCLCP Form must be completed and the form faxed to DEA HQ at (202) 307-8489.
3. For DEA-Only seizures, DEA must:
    - Prepare a Standard Seizure Form (SSF) and enter the funding authorization number in Item #34.
    - Issue an Asset ID in CATS.
    - Prepare a Significant Activities Cable that includes a rating of the contractor's performance (Satisfactory or Unsatisfactory) in Item 40, and include the Asset ID Statement in Item 43.
4. Written notification (CERTIFIED RETURN RECEIPT REQUESTED) must be sent by the DEA agent or the highest ranking local law enforcement officer to the property owner with copies to the environmental agency and health department with jurisdiction over the location of the seized laboratory.

## 3.4 Federal Notice Requirements

After the response is complete the CLEO will need to:

- Complete EPIC form 143
- Submit the completed EPIC form to the Western State Information Network at:

Mail: 1162 Court St NE
Salem, OR 97301-4096
Fax: (503) 373-1936, Phone: (503) 378-6347, (800) 952-5258
info@wsin.riss.net

- Ensure a copy of the completed EPIC form is included in the case file for the investigation.
- Supply a copy of the EPIC form and hazardous waste manifest to the HEER Office representative.

# SECTION 4

# INTERACTION BETWEEN LAW ENFORCEMENT AND THE DEPARTMENT OF HEALTH

# SECTION 4: INTERACTION BETWEEN LAW ENFORCEMENT AND THE DEPARTMENT OF HEALTH

## 4.1 Introduction

The primary focus of this section is to provide standard procedures for the interaction between law enforcement personnel and those of the HDOH HEER Office.

Adoption of Chapter 452 of Title 11, Hawaii Administrative Rules, will require ongoing communication between the HEER Office, state and county law enforcement, and the Federal DEA. The HDOH recognizes law enforcement duties, procedures, and policies, and has designed the technical guidance document to prevent unnecessary duplication of, obstruction, or conflict with law enforcement activities. Under this rule, law enforcement authorization is required before initiation of any HDOH-sanctioned decontamination processes. Cooperation between the HDOH HEER Office and the appropriate law enforcement agencies is integral to the effective implementation of this rule. This technical guidance document will outline the procedures for the interaction between law enforcement personnel and those of the HDOH HEER Office, which are based on Chapter 452 of Title 11, Hawaii Administrative Rules.

## 4.2 Reporting Requirements and Post-Raid Notifications

After any laboratory or other equipment and hazardous materials are removed from the methamphetamine manufacturing site, law enforcement personnel shall place a warning (i.e., Hazardous Material Warning Sign – See Appendix XXI) in a conspicuous location on the site to inform any potential visitors, licensees, or trespassers to the site that the CDL may pose a health hazard.

- The CLEO shall notify the HEER Office and the owner of the property (See Appendix II: Contamination Notification Letter) on which the methamphetamine manufacturing site was located as to the status of any investigation, decontamination, or cleanup of the site.
- Upon receiving notice from the CLEO, the owner of the property shall contact the HEER Office within 72 hours.

## 4.3 Initiation of Environmental Cleanup

The CLEO shall make an official determination/declaration as to the existence of a CDL.

Once the CLEO has made a determination, the CLEO shall contact the HEER Office and submit a report. The report shall include but not be limited to, the following information:

- The general layout of the methamphetamine manufacturing site and indicates the areas:
    - On which chemical reactions occurred;
    - Where chemicals and equipment were stored;
    - Where chemicals and waste were disposed of; and
    - Where equipment used to manufacture methamphetamine was discovered;
- The amounts and types of chemicals found and stored on the methamphetamine manufacturing site; and

- The method used to produce the methamphetamine, any precursor chemicals or intermediate products.

Copies of all written correspondence are retained in the case file. The HEER Office contact number is 808-586-4249. The HEER Office record as received from the CLEO is the same as for all other notifications. The information shall be recorded by the HEER Office contact and made a part of the HEER Office "site database." The property owner will be notified when the enforcement action has been completed and in coordination with the HDOH.

Before any decontamination efforts may commence, the following shall be completed:

- All criminal investigations of the methamphetamine manufacturing site
- A written report as described above
- All hazardous materials, precursor chemicals, intermediate products and equipment used or stored at the methamphetamine manufacturing site are disposed of and documented in a disposal record or hazardous waste manifest obtained from the hazardous waste disposal contractor
- The HEER Office obtains permission to enter the methamphetamine manufacturing site from the property owner/operator.

# SECTION 5

# THE DEPARTMENT OF HEALTH RESPONSE

# SECTION 5: THE DEPARTMENT OF HEALTH RESPONSE

## 5.1 Introduction

The HEER Office serves as the State's health agency that issues an interest letter to inform the owners of the property of a health issue involving a Clandestine Drug Laboratory (CDL). The HEER Office personnel should inform property owners when performing any on-site activities at CDLs. All HEER Office personnel performing CDL inspections or assessments should have current Hazardous Waste Operations and Emergency Response Training (29CFR1910.120).

## 5.2 Response

The HEER Office shall provide general oversight for the decontamination of methamphetamine manufacturing sites that meet the following criteria:

- The investigation of the site is referred to the HEER Office by the CLEO in accordance with section 11-452-26.
- The site contains methamphetamine, any precursor chemicals, or intermediate products in amounts that may pose a risk to human health or the environment.
- The site contains evidence of manufacturing.
- The site contains equipment used to manufacture methamphetamine, any precursor chemicals, or intermediate products.

No response operations from the HEER Office should commence until after full notification from the CLEO, as detailed in Section 4.3 – Initiation of Environmental Cleanup.

## 5.3 Guidance

The HEER Office uses this technical guidance document as the HDOH department guidance document for the investigation, sampling, and cleanup of methamphetamine manufacturing sites. The following material is consistent with the HEER Office Technical Guidance Manual (TGM) and the State Contingency Plan (SCP) as described in Hawaii Administrative Rules (HAR) Chapter 11-451, authorized by HRS 128D, the Environmental Response Law. This guidance may be revised as new technology and science become available and accepted by the HDOH.

# SECTION 6

# THE DEPARTMENT OF HEALTH OVERSIGHT OF THE DECONTAMINATION PROCESS

# SECTION 6: THE DEPARTMENT OF HEALTH OVERSIGHT OF THE DECONTAMINATION PROCESS

## 6.1 Introduction

This chapter is to be used as technical guidance for the decontamination process for all CDLs from start to finish. All proposed sampling activities must be justified by site-specific considerations. The HEER Office recognizes that the level of study for a CDL depends on the CDL size, type of production, and complexity of conditions. A given CDL may require more or less site-specific information and sampling to adequately address areas of known or potential concern.

## 6.2 Individual and Agency Roles and Responsibilities

Roles and responsibilities for property owners, remediation contractors, law enforcement, health department, and other agencies are described in this section and throughout this document. For any questions concerning specific responsibilities not listed in this document, please contact the HEER Office at:

Telephone: (808) 586-4249
From Maui (toll-free): 984-2400 ext 64249
From Hawai‘i (toll-free): 974-4000 ext 64249
From Kaua‘i (toll-free): 274-3141 ext 64249
From Moloka‘i or Lāna‘i (toll-free): (800) 468-4644 ext 64249
Fax: (808) 586-7537
E-mail: heer@doh.hawaii.gov
24-hour Hotline: (808) 247-2191

An effective CDL remediation will involve a cooperative effort among law enforcement, HDOH, the property owner, and the contractor. The parties involved and their overall responsibilities are as follows:

- The CLEO shall make a determination as to the existence of a methamphetamine manufacturing site. Once the CLEO has made a determination, the CLEO shall contact the HEER Office and submit a report as stated in Section 4.3.
- The HEER Office will declare the CDL a public health concern, approve the property owner’s private contractor(s) and their respective WP/FSP/HARP/QAPP, prohibit re-occupancy of meth lab properties, and provide oversight of the entire project until remediation and confirmatory sampling are complete.
- The property owner is responsible for the cost of remediation. As with any contracted work, it is in the best interest of the property owner to use caution when hiring someone to provide this service. The property owner should understand the work plan and monitor progress on the site through completion.
- Contractors work for property owners and with the HEER Office to assess, sample, clean, and dispose of wastes and materials removed from the property. Contractors should understand and complete remediation according to the guidance and oversight of the HEER Office. The contractor(s) will notify the HEER Office Point of Contact (POC)

any time access to the property is needed. The contractor will document its work to the extent required by the HEER Office, specified in this document.

Note: General oversight for the decontamination, cleanup, and sampling of these sites will be provided by HDOH when interacting with contractors or property owners to ensure that the cleanup process meets all state requirements.

## 6.3 Pre-Decontamination Procedures

Prior to any decontamination actions by a private contractor, the following activities must have occurred:

- All criminal investigations of the crime scene have been completed by the CLRT, and the HEER Office personnel have obtained permission to enter the property from the designated case agent.
- All lab process-related chemicals, waste, and paraphernalia have been removed and documented by law enforcement and its response contractors.
- Initial Notification to the HEER Office has been made by the CLEO of the Hawaii agency in charge of enforcement by a written report describing the general situation of the site buildings and nature of contamination (as stated in Section 4.3).
- The property owner in coordination with the HEER Office has contacted an environmental company that specializes in cleanup of contaminated sites.
- The initial assessment and inspection of the quarantined property by the property owner's cleanup contractor (with HDOH oversight) has been performed, appropriate PPE for cleanup workers has been selected, and the Hazard Assessment and Scope of Work have been completed.
- The initial assessment and inspection included diagrams of the site, lists of chemicals and equipment confiscated from the site, and other documents generated by law enforcement personnel.
- An initial walk through has revealed the physical layout of the site and has enabled the property owner's contractor to gather information about the locations and descriptions of interior surfaces and furnishings, and to identify and document visible signs of contamination.
- The potentially contaminated areas have been inspected and information gathered based on law enforcement reports (see Section 4.3).
- Once the preceding procedures have been completed, the contractor(s) must provide a WP (see Example below and Appendix XIII), a FSP (see Appendix XIV), a HARP (see Appendix X), and a QAPP (see Appendix XV). The WP, FSP, HARP, and the QAPP must be presented to the HEER Office for approval prior to the start of field work.

The following is a list of items included in a WP the cleanup/sampling contractor(s) shall deliver to the HEER Office for approval. If the property owner decides to hire two separate contractors; a remediation "cleanup" contractor, and a "post cleanup" sampling contractor, two separate WPs, FSPs, HARPs, and QAPPs must be submitted. This includes, but is not limited to, the following information:

- The specific areas of the methamphetamine manufacturing site from which samples shall be collected
- The number of samples to be collected
- The methods for analyzing the samples
- A list of suspected contaminants
- The measures to ensure quality assurance and quality control
- The measures to minimize or reduce worker exposure to hazards during the cleanup process
- The measures to address overall contaminant removal
- Identification of any contaminated non-manufacturing items, which includes, but is not limited to: carpets, rugs, furniture, white goods, and clothing, and the measures to dispose of such items
- Identification of any biohazards, which includes, but is not limited to: syringes tainted with bodily fluids and the measures to dispose of such items
- The measures to ensure the effective remediation of ventilation systems, which include air conditioning and heating systems
- The measures to ensure the effective decontamination and cleanup of any plumbing fixtures and plumbing systems.

For outdoor decontamination, the cleanup contractor shall deliver a WP to the HEER Office that also includes a list of the measures to ensure the safe and effective remediation of any impacted sewage system.

Note: All proposed field work must be accomplished with HDOH oversight.

## 6.4 Pre-Decontamination Sampling for Absence of Contamination

The determination of the HEER Office is that time and money are better spent confirming decontamination has been successful after the remediation process rather than trying to establish where the contamination is located. Significant data show that widespread contamination from a single cook spreads to encompass many areas in close proximity. However, pre-remediation sampling is allowed by the HEER Office. A pre-remediation sampling plan must clearly demonstrate consideration of the use, materials, and size of each room or structure to be sampled. A sufficient number of wipe samples should be taken appropriate to the use of the structure. For example, to demonstrate the absence of meth contamination will require at least one meth wipe sample collected from a high and unclean surface in each room of an occupancy structure and each area of an outbuilding. The sampling plan should include sampling of places and materials most likely to be contaminated with meth:

- All rooms and all structures on a meth manufacturer's property are considered potentially contaminated.
- It is mandatory that all structures containing a meth lab or chemicals be cleaned or pre-sampled to demonstrate that remediation is unnecessary.

- It is mandatory that all occupancy structures on a property where a meth lab, chemicals, paraphernalia, or wastes are found be cleaned or pre-sampled to demonstrate that remediation is unnecessary.
- It is strongly recommended that all structures on a property where meth labs or chemicals are found be cleaned or sampled.
- If full remediation of contents and structure is conducted as described below, sampling for meth before cleaning interiors of structures is not required.

**Some Conditions That May Affect Work Plan Decisions**

- Site History: Indications of severity of contamination—e.g., length of occupancy; real (chemicals or equipment) or anecdotal evidence (odors twice-weekly) gathered by law enforcement or provided by property owner, neighbors, or occupants.
- Site Use and Occupancy: Potential human (particularly child) exposure—e.g., site is a single-family home, hotel/motel, chicken coop, attached garage.
- Sampling Intentions/Evidence: Location and number of samples taken or to be taken will affect ability to plan a modified remediation.
- Proximity to Cooking or Storage Areas: Degree of apparent contamination, as indicated by police evidence, chemical staining, signs of fire or explosion, etc.
- If the property owner does not wish to presume contamination, the owner must hire a contractor to perform a pre-cleaning assessment to demonstrate low or non-detectable meth levels in the part of the property in question. The HEER Office can direct or modify a proposed sampling plan, and can accept or reject use of a sampling method, sampling location(s), number of samples, or analytical laboratory to be used.

Personal belongings found in a former meth lab structure are presumed contaminated and should be discarded. At the insistence of the property owner and discretion of the contractor and HEER Office, some items may be: (1) cleaned without sampling, (e.g., eye glasses, adults' clothing, major appliances) or (2) sampled, cleaned, and re-sampled (e.g., high-cost, low contact large furniture items). Decisions must be based not only on cost-effectiveness but also potential future use of the items.

## 6.5 Decontamination Procedures

To decontaminate the property for which a notice has been issued, the property owner or the property owner's contractor shall follow these guidelines established by the HDOH HEER Office.

Because every CDL is different, no single template for cleanup applies to every site. This document attempts to provide some flexibility for the property owner based on the degree of contamination at his or her site.

Much of the decontamination guidance involves removal of potentially contaminated items such as carpets, countertops, sinks, toilets, and bathtubs. In some instances, removal of an item may not be necessary if it can be sufficiently decontaminated and verified with analytical results. The property owner should be aware that it may be more cost effective to remove and dispose

of certain furnishings and appliances (e.g., carpet, upholstery, draperies, and stoves/ranges), rather than to try to decontaminate them.

Hawaii regulations allow for the decontamination or cleanup of the property and the subsequent sampling to be conducted by the property owner. While this may be an option, the HEER Office strongly recommends that the property owner consider utilizing qualified personnel—e.g., HAZMAT or remediation contractors for decontamination, and environmental or health professionals for confirmation sampling. Small, former, illegal CDL operations may not require professional assistance for decontamination activities; however, in most instances, the application of field-screening technology and sampling protocols require professional experience and qualification.

### 6.5.1 Safety During Decontamination Activities

Decontamination activities pose the risk of potential exposure to hazardous substances and chemicals. Property owners may not employ workers without requisite Hazardous Waste Operations and Emergency Response (HAZWOPER) training and certification specified by regulations contained in 29 CFR 1910.120, which are accessible via the internet at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765

These regulations outline the necessary protective measures that are taken during hazardous substance cleanup operations and include the use of air-monitoring equipment and appropriate PPE to prevent injury from physical and chemical hazards at a site.

If the property owner elects to have a contractor perform the decontamination activities, the HEER Office recommends that the contractor meet the requirements provided in Section 6.5.2. After conducting initial air monitoring, the contractor may determine whether the use of an air-purifying or other type of respirator is necessary for workers. In most cases, Level C PPE (with air purifying respirator) or Level D PPE (without respirator) will suffice during CDL cleanup activities.

For either level C or D protection, workers also will wear:

- Chemically protective clothing (hooded Tyvek® or Saranex® coveralls)
- Eye protection (face shields, goggles, or safety glasses)
- Hand protection (latex or nitrile gloves)
- Rubber work boots or disposable latex overboots
- Duct tape (to seal seams at wrists and ankles).

The HEER Office recommends that property owners electing to decontaminate their own property without the aid of a contractor also work in Level C PPE as described above. The protective equipment listed above can typically be obtained at hardware stores and/or safety equipment supply stores. The air purifying respirator cartridge should protect against particulates and organic vapors.

## 6.5.2 When Hiring a Contractor, What is Required?

The HEER Office strongly recommends that property owners utilize a contractor trained and equipped to perform hazardous chemical remediation for the decontamination of former illegal meth lab sites. The benefits of hiring a qualified contractor include the assurance that the appropriate safety precautions will be implemented and provision of an added level of defense in the demonstration that the property has been adequately decontaminated. A qualified environmental contractor or consultant is also recommended to perform sampling within the residence to confirm that cleanup levels have been met. Information and proper documentation gathered by an unbiased, qualified third party may provide an added layer of defensibility to sampling results. The decision to hire contractors for decontamination or sampling is left to the property owner.

### 6.5.2.1 Recommendations for HAZMAT or Remedial Contractors

If a HAZMAT or remedial contractor is hired to perform the decontamination, the HEER office recommends that the property owner confirm that the contractor meets the following requirements:

- The contractor should be licensed and bonded (for the assurance of the property owner).
- The contractor must provide a supervisor and site workers who are certified for working with HAZMAT. At a minimum, the supervisor and site workers are required to have completed OSHA 40-hour HAZWOPER training.
- The contractor must provide suitable PPE for all personnel involved in cleanup operations, including appropriate respiratory protection for a Level C response if site conditions warrant it. Use of respirators requires a physician's statement, fit testing, and respiratory protection training (as stated in 29 CFR 1910.134).

If a property owner hires an individual (independent of a qualified company or contractor) to assist with the decontamination of his or her property, he or she assumes the responsibilities as an employer. As such, any workers employed by or assisting the property owner are required to be HAZWOPER trained. These responsibilities are mandated and defined by OSHA. The HEER Office recommends that the property owner contact an OSHA representative to ensure that these legal obligations are met.

### 6.5.2.2 Recommendations for Sampling Contractors

If a contractor is hired to perform sample collection, the HEER Office recommends that the property owner confirm the following:

- The contractor should be licensed and insured (for the assurance of the property owner).
- The contractor shall provide samplers who meet the requirements of a qualified environmental/indoor air quality sampler (a Certified Industrial Hygienist is recommended but not required).
- The contractor is required to provide suitable PPE for all personnel involved in sampling operations.
- The contractor shall be familiar with the sampling protocols specified in this guidance document (see Appendix XVI, Appendix XVII, Appendix XVIII, and Appendix XIX).

## 6.5.3 Decontamination Requirements

Initial stabilization of the property through removal of chemicals, manufactured drugs, paraphernalia, or any other items needed by law enforcement authorities should occur before the cleanup. This process is called gross chemical removal, although it is often mistakenly referred to as cleanup.

Once gross chemical removal is completed, the property owner is responsible for removing and disposing of, or cleaning, remaining items at the property with residual contamination. In this guidance, residually contaminated areas (or areas with residual contamination) are subdivided into two categories: (1) heavily contaminated areas and (2) areas with low-level contamination.

In general, five steps are required to decontaminate:

**Step 1:** Heat and ventilate the building to remove residual VOCs. Section 6.5.3.1 describes ventilation procedures.

**Step 2:** Remove interior furnishings and household contents (e.g., dishes, clothing, and food). Section 6.5.3.2 provides recommendations regarding the handling of furnishings and household items.

**Step 3:** Decontaminate heavily contaminated areas. These areas are locations where chemicals were stored, and areas where the "cook" occurred, or where chemicals were mixed or disposed of (e.g., sinks and bathtubs). Section 6.5.3.3 describes the decontamination protocols to be used for areas assumed heavily contaminated.

**Step 4:** Decontaminate areas with low-level contamination. These areas are rooms located away from the cooking or mixing areas that are assumed contaminated through the volatilization and subsequent deposition of chemicals. Section 6.5.3.4 provides decontamination protocols for areas assumed to have low-level contamination.

**Step 5:** Encapsulate materials that cannot be adequately decontaminated via cleaning and/or removal. Section 6.5.3.5 describes encapsulation procedures. Consideration must be given to potential impacts to VOC sampling results when encapsulating surfaces using oil-based paints or sealants, or replacing carpets or other types of flooring because of the VOCs associated with these materials. Review Appendix XVIII for guidance. Items removed from the property must be disposed of in accordance with applicable rules and regulations. As described above, heavily contaminated areas are assumed those areas where chemicals were stored and/or used, cooking areas, and areas where chemicals may have been mixed or disposed of (such as toilets, sinks, bathtubs, and showers). Surfaces in these areas also may exhibit chemical staining or etching (from acids), depending on the method and chemicals used to manufacture the methamphetamine. The identification of heavily contaminated areas should be based on the following:

- Visual observations (staining or etching)
- Reports and/or photographs obtained from law enforcement officials that indicate the location of drug laboratory equipment and chemicals when the drug bust occurred
- Field-screening techniques (optional). Section 6.5.5 provides additional details regarding field-screening techniques that may be helpful in guiding decontamination activities.

For example, if drug laboratory equipment and chemicals were documented in the kitchen and bathroom of the example residence shown in Figure 6-1, and visual assessment did not note any chemical staining in any other room, then those two rooms (kitchen and bathroom) would be assumed heavily contaminated. The remaining rooms in the house (bedrooms, living room, utility room, and garage) would be assumed to have low-level contamination. The HEER Office recommends that the hallway between the kitchen and bathroom also be considered a heavily contaminated area because this was likely a high traffic area between the two rooms.

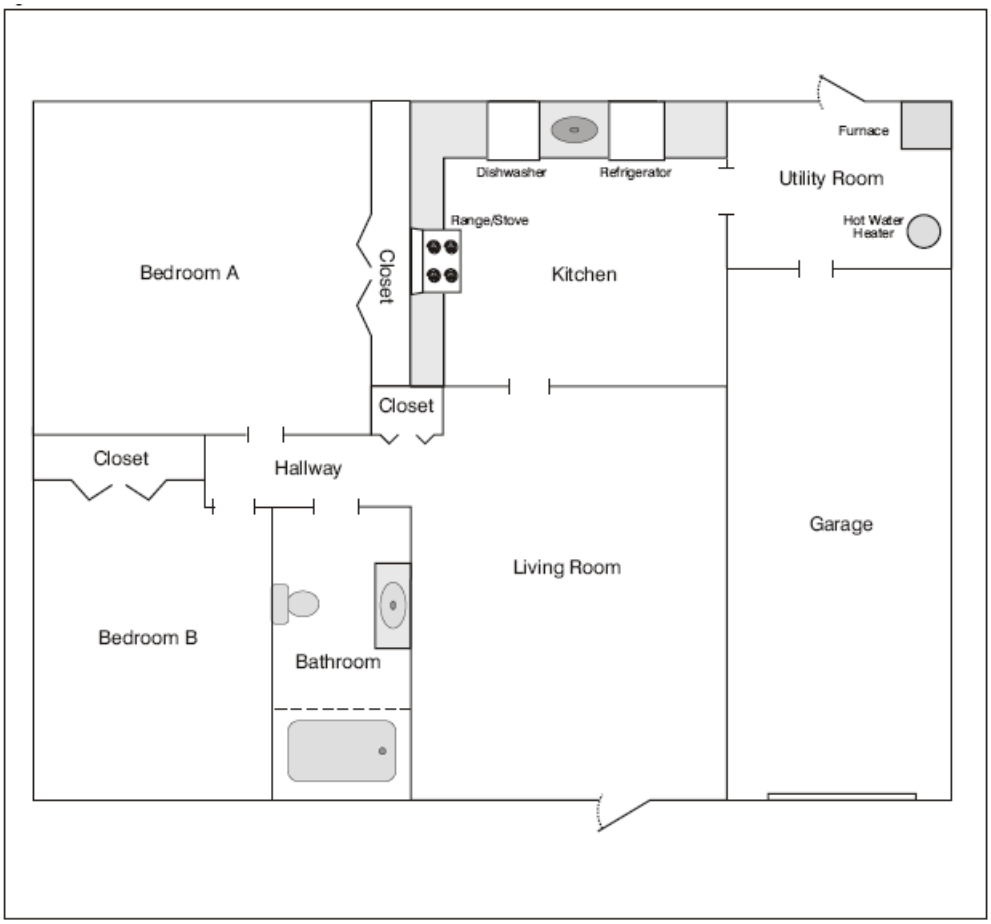
#### 6.5.3.1 Ventilation Procedure Requirements

Before commencement of cleanup activities and to allow for weather constraints, the premises shall be heated to 75° Fahrenheit (F) or higher (24° Celsius [C] or higher) and ventilated for at least 24 hours. Ventilation can be performed by opening windows throughout the residence to allow cross-ventilation. Mechanical fans and/or a negative air unit with a HEPA filtration system can be used, if necessary, to improve ventilation. Care must be taken to ensure that vented contaminants are exhausted to the outdoors and not to air intakes of adjacent structures.

The use of supplemental, portable heating units may be necessary if the building heating system has been inactivated or is incapable of achieving the desired temperature because of cold weather conditions. Portable heating units and ventilation equipment can be obtained from equipment rental companies.

It is important to continue ventilation throughout the remediation process (except when it would interfere with air monitoring). To protect workers and to limit cross-contamination, leave windows open and use fans, blowers and/or a negative air unit with a high-efficiency particulate air (HEPA) filtration system during the cleanup. Negative air units equipped with a HEPA filtration system limits or prevents the transfer of airborne contamination from dirty to clean areas.

## Figure 6-1 Example Residence




### 6.5.3.2 Removal of Furnishings and Household Contents

The disposition of the contents of a structure where a CDL operated will depend on many factors, including an assessment of the degree of contamination, legal status of the resident or owner, and value of the items to the owner (e.g., precious heirlooms or sentimental items). The property owner should be aware that it might be more cost effective to discard certain items rather than decontaminate them. Considering the potential for human contact, the intrinsic and emotional value and the porosity of an item or material may help guide decisions as to whether the item or material should be discarded. For example, carpet should always be discarded because it has a high potential for human contact (especially since young children tend to crawl on the floor), has relatively low intrinsic and emotional value and is extremely porous and, therefore, difficult to successfully decontaminate. The following list provides some guidance regarding the disposition of site furnishings and household contents.

These recommendations were adapted from MDOH's Clandestine Drug Labs, General Cleanup Guidelines (MDOH 2003):

- **Food:** All food should be discarded, including pet food.

- **Small and large appliances:** Stoves/ranges used to cook methamphetamine should be discarded because it is too difficult to ensure that contamination is removed from all crevices. Large appliances, such as refrigerators, dishwashers, washers, and dryers, with no evidence of visual contamination can be decontaminated by washing exterior and interior surfaces with a hot water detergent solution and rinsing with clean water. The wash and rinse procedures should be performed at least three times using clean fluids. Small appliances that are used for food preparation, such as toasters, microwave ovens, and coffee makers, should be discarded.
- **Clothing, linens, and other fabric items:** Fabrics with obvious chemical staining or contamination should be discarded. Washable fabrics, including bed linens, area rugs, and soft toys, should be machine washed at least three times with a solution of hot water and detergent. Fabrics that cannot be washed with detergent and water should be dry cleaned using a liquid solvent dry-cleaning solution in a dry-cleaning machine for at least 15 minutes—see requirement below.
- **Dishes, flatware, and other hard (non-porous) household goods:** Any item that shows evidence of being used for the cooking process (e.g., staining and/or etching) should be discarded. Washable items, including ceramics, hard plastics, metals, and glass, should be washed and rinsed with hot water and detergent at least three times.
- **Household items made of wood and wood-like composites:** The disposition of these generally porous items depends on the degree of contamination, surface finish (e.g., varnish, polyurethane), value, and ability of the item to be washed with a solution of hot water and detergent. If considered cleanable, these items should be washed at least three times, rinsed, and possibly coated with an oil-based finish.
- **Upholstered furniture:** Disposal of these items is recommended. If items are being disposed of, for example, couches and chairs, it is recommended the furniture be physically destroyed so that they cannot be re-used. Cleaning of upholstered items that are not discarded because of obvious contamination should consist of vacuuming using a machine equipped with a HEPA filtration system, followed by hot water detergent or steam cleaning.
- **Household books and paper items:** Paper goods are extremely porous. Any paper items near the area of a known laboratory shall be discarded. Paper goods stored in filing cabinets, closed bookcases, or cupboards in rooms where wipe samples show low levels of contamination may be salvageable. Given the uncertain history of most laboratory sites, disposition of such porous materials should err on the conservative side.

If any materials are removed from the property for cleaning (e.g., curtains, rugs), they should be HEPA vacuumed before being removed from the site and the cleaning facility shall be notified in writing by the property owner or their contractor that the materials being cleaned are from a former illegal drug laboratory. The vacuum cleaner should be of commercial grade and equipped with a HEPA dust collection system. Bagless vacuum cleaners should not be used for any cleanup work at a former illegal meth lab site. Suitable HEPA vacuums can be rented from equipment supply companies. Household vacuums equipped with HEPA filters, such as those purchased at retail stores, are not acceptable.

#### 6.5.3.3 Decontamination Procedure Requirements for Heavily Contaminated Areas

The HEER Office recommends that doors or other openings to areas assumed to have low-level contamination be cordoned off with plastic sheeting where possible to reduce the spread of contamination during decontamination of heavily contaminated areas. Once the rooms have been emptied of the household items, the following procedures shall be used to decontaminate the building interior. These procedures generally require the use of cleaning solutions consisting of hot water and Simple Green® or trisodium phosphate (TSP) detergents, unless otherwise specified. Both cleaners are readily available at retail stores, including hardware and home improvement stores.

All areas of the premises assumed or known to be heavily contaminated shall be vacuumed, including the ceilings and ductwork. Reference Section 6.5.3 for additional guidance on identifying heavily contaminated areas. Before vacuuming, all closets and cabinets will be opened, and cabinet drawers will be removed. The vacuum cleaner will be of 3-10 commercial grade and equipped with a HEPA dust collection system. Refer to Section 3.5.3.2 for HEPA vacuum specifications.

The following paragraphs provide decontamination guidelines for specific items such as kitchen countertops and bathroom fixtures. However, because each CDL cleanup will be different, guidelines for general categories of building materials are also provided. In essence, all heavily contaminated surfaces within a former CDL shall be removed and replaced, or cleaned during decontamination activities.

- **Bathroom fixtures:** Remove and replace visibly contaminated (stained or etched) sinks, bathtubs, toilets, and shower stalls. Remove and replace all accessible plumbing traps. If a plumbing trap cannot be removed because of inaccessibility, then it shall be flushed with hot water and detergent solution for at least 5 minutes. All non-porous surfaces, such as bathtubs, toilets, mirrors, windows, tile flooring, and sinks that are not removed shall be cleaned. If cleaned, these surfaces shall be washed with a solution of hot water and Simple Green® or TSP and rinsed with hot water. This shall be done at least two additional times with clean wash and rinse water.
- **Kitchen/bathroom countertops:** Remove and replace all porous countertops and food preparation surfaces. Porous materials include wood and granite. Manmade solid surface countertops, such as Corian®, may be sanded to remove any contaminated material, washed with a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This shall be done at least two additional times with clean wash and rinse water.
- **Walls:** Walls in the immediate vicinity of the cooking area may be stained or may have absorbed some of the chemicals used in the manufacture of methamphetamine. Wall materials, such as sheet rock, with visible staining or discoloration should be removed and replaced. It is recommended that all baseboards and window and ceiling trim in heavily contaminated areas be removed and replaced. Walls with no evidence of staining shall be cleaned in accordance with the guidelines below for porous and non-porous surfaces, depending on the building material type.
- **Carpeting:** Remove all carpeting from rooms designated as heavily contaminated. Carpet must be misted with water before removal to prevent dust particles from becoming airborne. This is a protection measure for cleanup personnel. Once the

carpeting and pad are removed, the non-porous sub-floor shall be vacuumed with a HEPA vacuum.

- **Fans and Vents:** All floor and window fans shall be removed and disposed of. Exhaust vents such as those used above ranges/stoves shall be removed and replaced.
- **Ceilings:** Ceiling tiles, drop ceiling panels, and other types of ceilings (e.g., painted sheetrock, spray on textured ceilings) in the immediate vicinity of the cooking area shall be removed and replaced.

  Important: Some ceiling tiles and panels may contain asbestos, especially in older buildings. If the presence of asbestos is suspected, additional testing and safety precautions may be warranted to prevent exposure during the removal and cleaning process.

  Ceilings with no evidence of staining shall be cleaned in accordance with the guidelines below for porous and non-porous surfaces, depending on the building material type:

  - Non-porous (i.e., smooth painted ceilings) shall be washed with a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This shall be done at least two additional times with clean wash and rinse water.
  - Porous ceilings in areas of the premises not associated with the cooking process shall be vacuumed with a commercial HEPA equipped vacuum cleaner and must be encapsulated with oil-based paint.
- **Windows/Glass:** All windows and glass surfaces shall be cleaned with a commercial glass-cleaning compound (e.g., Windex®) at least three times, using clean solution each time.
- **Storage cabinets and closets:** The interior and exterior of all storage cabinets and closets shall be washed with a solution of Simple Green® or TSP and hot water. This procedure will be done at least two additional times with clean wash and rinse water.
- **Electrical fixtures:** Electrical outlet covers, wall switch plate covers, and light fixtures shall be removed, washed in a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This will be done at least two additional times with clean wash and rinse water.

  Note: Remember to cut the power when decontaminating or washing electrical fixtures and switches.
- **Remaining non-porous items, such as ceramic tile flooring, doors, vinyl or metal mini-blinds, and door and window hardware:** Remove and replace all visibly stained items. Items with no evidence of staining or etching shall be cleaned by HEPA vacuuming, then washed with a solution of hot water and Simple Green® or TSP, and rinsed with hot water. The items shall be washed at least two additional times with clean wash and rinse water.
- **Remaining porous materials such as painted drywall, flooring (e.g., linoleum), ceiling tiles, and spray-on wall or ceiling surfaces:** Remove and replace all visibly stained items.

  Important: Some ceiling and flooring tiles and sheet flooring products may contain asbestos, especially in older buildings. If the presence of asbestos is suspected, additional testing and safety precautions may be warranted to prevent exposure during the removal and cleaning process.

Items with no evidence of staining shall be cleaned by HEPA vacuuming and one of the following methods:

- Steam cleaning: Hot water and detergent shall be injected into the porous materials under pressure to agitate and loosen any contamination. The water and detergent solution shall then be extracted from the porous material by a wet vacuum.
- Chemical dry cleaning: Porous materials that cannot be washed with detergent and water shall be dry cleaned using a liquid solvent dry-cleaning solution in a dry-cleaning machine for at least 15 minutes. On-site dry cleaning is *not* recommended because of the VOCs associated with dry-cleaning solvents. Items cleaned off site should not be returned to the site until after VOC sampling has been performed, and the results indicate that the required cleanup standard has been met.
- Detergent and water solution: Porous materials shall be washed in a washing machine with detergent and hot water for at least 15 minutes. The porous materials shall be rinsed with water.

If any materials are removed from the property for cleaning, they shall be thoroughly HEPA vacuumed prior to removal, and placed in plastic bags or visqueen for transport to the cleaning facility. The cleaning facility shall be notified in writing (by the property owner or his/her contractor) that the materials being cleaned are from a former CDL.

#### 6.5.3.4 Decontamination Procedure Requirements for Areas with Low-Level Contamination

The following paragraphs provide decontamination guidelines for specific items, such as walls, ceilings, and switch plates, that may be found in rooms considered to have low-level contamination. Because each CDL cleanup will be different, guidelines for general categories of building materials are also provided. All surfaces within rooms considered to have low-level contamination shall be cleaned during decontamination activities unless sampling and laboratory testing indicate that the concentration of contaminants is below the required cleanup levels.

All areas of the premises assumed or known to have low-level contamination shall be vacuumed, including the ceilings and ductwork. Reference Section 6.5.3 for additional guidance on delineating areas with low level contamination. Before vacuuming, all closets will be opened, cabinet doors will be opened, and drawers will be removed. The vacuum cleaner will be of commercial grade and equipped with a HEPA dust collection system. Refer to Section 6.5.3.2 for HEPA vacuum specifications.

- **Walls:** All walls shall be washed with a solution of hot water and either Simple Green® or TSP, and rinsed with hot water. This will be done at least two additional times with clean wash and rinse water on each wall surface, unless the wall area is sampled and the sample results indicate that the cleanup standard has been met.
- **Electrical fixtures:** Electrical outlet covers, wall switch plate covers, and light fixtures shall be removed, washed in a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This will be done at least two additional times with clean wash

and rinse water. Note: Power should be cut when decontaminating or washing electrical fixtures and switches.

- **Windows:** All windows and glass surfaces shall be cleaned with a commercial glass-cleaning compound (e.g., Windex®) at least three times, using clean solution each time.
- **Ceilings:** All ceilings shall be cleaned in accordance with the guidelines below for porous and non-porous surfaces, depending on the building material type:
    - Non-porous (i.e., smooth painted ceilings) shall be washed with a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This shall be done at least two additional times with clean wash and rinse water.
    - Porous ceilings in areas of the premises not associated with the cooking process shall be vacuumed with a commercial HEPA-equipped vacuum cleaner and encapsulated with an oil-based paint.
- **Ventilation Systems:** If a meth lab is located in a structure with an heating, ventilation and air conditioning (HVAC) system or other residential forced air system it can be expected that fumes, dust and other contaminants have collected in the vents, ductwork, filters and on walls and ceilings near the ventilation ducts. It should be noted that a single HVAC system can service multi-unit structures (e.g., apartments, storage facilities), and allow contamination to be spread throughout. To limit this possibility, the HVAC system should be shut down and remain off until remediation of the former meth lab is complete. The cleaning of ventilation ductwork, registers, air-handling units, heaters, air conditioners, filters, and associated equipment requires specialized equipment that may be obtained from a HVAC contractor or supplier. The equipment and cleaning procedures are discussed below:
    - Air registers shall be removed and washed with a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This shall be done at least two additional times with clean wash and rinse water.
    - Temporary filter media shall be attached to air register openings.
    - A fan-powered HEPA filter collection machine shall be connected to the ductwork to develop negative air pressure in the ductwork.
    - Air lances, mechanical agitators, or rotary brushes shall be inserted into the ducts through the air register openings to loosen all dirt, dust, and other materials.
    - The air handler unit, including the return air housing, coils, fan(s), system(s), and drip pan, shall be washed with a detergent and water solution and then thoroughly rinsed. This cleaning procedure shall be repeated at least two times using new detergent solution and rinse water.
    - All porous linings or filters in the ventilation system shall be removed and properly disposed of.
    - The ventilation system shall be sealed off at all openings with at least 4-mil plastic sheeting to prevent recontamination until sampling indicates that building surfaces within the property meet the cleanup standards.
- **Storage cabinets and closets:** The interior and exterior of all storage cabinets and closets shall be washed with a solution of Simple Green® or TSP and hot water. This procedure will be done at least two additional times with clean wash and rinse water.

- **Septic systems:** If a septic system is present, it shall be pumped out and the effluent discharged to the local publicly owned treatment works.
- **Plumbing traps:** Because meth chemicals are frequently poured down the drain during active cooking, concentrations of these chemicals may remain in the traps of sinks and other drains. All accessible plumbing traps shall be removed and replaced. If a plumbing trap cannot be removed because of inaccessibility, then it shall be flushed with hot water and detergent solution for at least 5 minutes.
- **Remaining non-porous items, such as countertops, ceramic tile flooring, doors, vinyl or metal mini-blinds, door and window hardware, and other fixtures:** Items such as these shall be washed with a solution of hot water and Simple Green® or TSP, and rinsed with hot water. This shall be done at least two additional times with clean wash and rinse water.
- **Remaining porous materials such as painted drywall, flooring (e.g., linoleum, laminate flooring, etc.), ceiling tiles, and spray-on wall or ceiling surfaces:** Items shall be cleaned by HEPA vacuuming and one of the methods described in Section 6.5.3.3.

#### 6.5.3.5 Encapsulation Procedure Requirements

Encapsulation is the process of providing a physical barrier (e.g., painting or sealing the surface) between contaminated materials and any person who may be exposed to the contaminated surface. Encapsulation is not required, with one exception, provided that surfaces can be cleaned and sampling indicates that the cleanup standards are met. If decontamination procedures are not successful in removing contamination to acceptable levels, the property owner can elect to re-clean the surfaces or encapsulate the contamination by performing the following:

- Walls should be painted with two coats of *oil-based* paint or Kilz®.

  Note: Oil-based paints contain significant quantities of VOCs. Painting and/or sealing should occur after confirmation sampling for VOCs.

- Any wood that has not been removed should be encapsulated with an oil-based paint or sealant.

  Note: There is no database that identifies commercial products, including shellacs and other sealants that effectively encapsulate methamphetamine residues. Because methamphetamine is soluble in water, oil-based encapsulation sealers or paints are recommended. Additional information regarding the effectiveness of a given paint or sealant may be available from the manufacturer.

- Wood floors or sub-flooring should be painted with two coats of oil-based paint, or with two coats of shellac.
- Spray-on acoustical ceiling surfaces (i.e., popcorn ceilings) that are not removed *must* be encapsulated by spray painting with two coats of oil-based paint or Kilz® because this surface is not amenable to cleaning. The effectiveness of encapsulation must be confirmed via sampling of the surface to demonstrate that the required cleanup standard for methamphetamine is met.

### 6.5.3.6 Outdoor decontamination requirements

Soil remediation shall be subject to cleanup levels specified by the HEER Office. Soil cleanup levels for a limited number of chemical compounds associated with the manufacturing of methamphetamine may be set forth in the HEER Office TGM. If there are no established cleanup levels for a chemical compound and subject to the approval by the HEER Office, the cleanup contractor may propose an appropriate cleanup level using one of the following criteria:

- Background Concentration (for metals only)
- The Method Detection Limit
- Risk-Based Concentration.

Groundwater and surface water remediation shall be subject to cleanup levels specified by the HEER Office. Groundwater and surface water cleanup levels for a limited number of chemical compounds associated with the manufacturing of methamphetamine may be provided in the HEER Office TGM. If there are no established cleanup levels for a chemical compound and subject to the approval by the HEER Office, the cleanup contractor may propose an appropriate cleanup level using one of the following criteria:

- Background Concentration (for metals only)
- The Method Detection Limit
- Risk-Based Concentration.

## TABLE 6-1

## ENVIRONMENTAL ACTION LEVELS FOR SELECTED CHEMICAL COMPOUNDS ASSOCIATED WITH CLANDESTINE METHAMPHETAMINE LABORATORIES

| Compound | Soil Remediation Objective | Groundwater Cleanup Standard | Soil Concentration Protective of Groundwater[c] | Surface Water Cleanup Standard |
|---|---|---|---|---|
| Acetone | 1400 mg/kg | 5500 µg/L | 0.5 mg/kg | 1500 mg/kg |
| Benzene | 0.64 mg/kg | 5.0 µg/L | 0.22 mg/kg | 46 mg/kg |
| Chloroform | 0.22 mg/kg | 100 µg/L | 1.8 mg/kg | 6200 mg/kg |
| Formic acid[d] | pH > 2 | pH 6.5-8.5 | - | - |
| Glacial acetic acid[d] | pH > 2 | pH 6.5-8.5 | - | - |
| Hydrochloric acid[d] | pH > 2 | pH 6.5-8.5 | - | - |
| Methyl ethyl ketone | 2000 mg/kg | 7000 µg/L | 6.4 mg/kg | 14000 mg/kg |
| Methylene chloride | 9.2 mg/kg | 4.3 µg/L | 0.67 mg/kg | 2200 mg/kg |
| Phosphoric acid[d] | pH > 2 | 4.7 µg/L | - | - |
| Sulfuric acid[d] | pH > 2 | pH 6.5-8.5 | - | - |
| Toluene | 650 mg/kg | 1000 µg/L | 2.9 mg/kg | 130 mg/kg |
| Lead[a] | 400 mg/kg | 15 µg/L | 200 mg/kg | 5.6 mg/kg |
| Mercury (elemental)[a] | 13 mg/kg | 2 µg/L | 10 mg/kg | 0.0025 mg/kg |

**TABLE 6-1 (Continued)**

**ENVIRONMENTAL ACTION LEVELS FOR SELECTED CHEMICAL COMPOUNDS ASSOCIATED WITH CLANDESTINE METHAMPHETAMINE LABORATORIES**

| Compound | Soil Remediation Objective | Groundwater Cleanup Standard | Soil Concentration Protective of Groundwater[c] | Surface Water Cleanup Standard |
|---|---|---|---|---|
| Mercury (ionic compounds[b])[a, d] | 23 mg/kg | 2 µg/L | 0.88 mg/kg | - |

Notes:

[a] Associated with phenyl-2-propanone (P2P) method only.
[b] Ionic mercury compounds such as mercuric chloride ($HgCl_2$).
[c] Applies if impacted soil is near or in contact with groundwater or surface water.
[d] Levels were not available from the Hawaii website, so standards were used from the State of Colorado.
mg/kg Milligrams per kilogram
µg/L Micrograms per liter

## 6.5.4 Waste Management

Decontamination activities will generate both solid waste (e.g., trash) and liquid waste or wastewater (e.g., used decontamination fluids). All wastes must be disposed of in accordance with applicable state and federal laws and regulations. In general, wastewater may be discharged to a sanitary sewer or septic system unless it contains concentrated decanted or spilled chemicals. Any waste materials determined to meet the regulatory definition of *hazardous waste* must be disposed of in accordance with applicable state and federal laws and regulations for those types of wastes. In some instances, small quantities of hazardous waste may be disposed of via the local household hazardous waste program with little cost to the property owner.

The determination for final disposition of waste may require testing, and should be made by a person knowledgeable in hazardous waste characteristics, regulations, and disposal requirements.

## 6.5.5 Field-Screening Methods

The field-screening instrumentation and tests included in the sections that follow may be helpful to identify the progress of decontamination efforts and the extent to which these efforts must precede (e.g., adjoining rooms). Field screening is not intended to provide final confirmation laboratory results, but to provide real-time information to confirm the presence or apparent absence of contaminants.

Use of a photoionization detector (PID) and/or a flame ionization detector (FID) should easily identify the locations and/or sources of VOC contamination, and can provide strong evidence when VOC abatement is adequate. However, there are household sources of VOCs, such as new carpet, paints, and other materials and substances that can be detected by a PID or FID. In the event positive readings are encountered, the source of the VOCs should be investigated using the instrument as a guide. For example if chemicals were spilled on the flooring during

drug manufacturing operations, the PID or FID readings will increase as the instrument approaches the source (area where chemicals were spilled).

Final confirmation sampling and testing must be performed in accordance with Section 6.6 of this guidance.

Field-screening instrumentation also exists for lead and mercury. While these instruments are not readily available in Hawaii and require some degree of expertise to operate, in the event of significant lead or mercury contamination, the use of these instruments by a qualified person may be cost effective and in some instances necessary.

Field-screening techniques for each contaminant of concern are summarized below.

#### 6.5.5.1 Volatile Organic Compound Field Screening

Measurement System: PID and/or FID
Measurement Method: Instrument is used to scan the air in rooms and inside drains. High gas readings indicate the presence of VOCs or solvents requiring decontamination.
Detection Limit: 1 ppm
Cleanup Standard: 1 ppm
Approximate Cost: $85 per day
Methods used in: All

#### 6.5.5.2 Lead Field Screening

Measurement System: XRF
Measurement Method: XRF can be used to test wipe or vacuum samples directly, or test surfaces directly (such as a wall). Prepared samples may be analyzed to achieve quantitative data.
Detection Limit: 50 µg/cm$^2$ (i.e., 25 times the cleanup standard)
Cleanup Standard: 2 µg/100 cm$^2$
Approximate Cost: $200 to $600 per day
Methods used in: P2P only

#### 6.5.5.3 Mercury Field Screening

Measurement System: Mercury Vapor Analyzer
Measurement Method: Instrument reads concentration of mercury in air.
Detection Limit: 3,000 ng/m$^3$ (Jerome model)
Cleanup Standard: 50 ng/m$^3$
Approximate Cost: $700+ per day
Methods used in: P2P only

Through the use of field-screening techniques, heavily contaminated areas may be readily identified.

## 6.6 Post-Decontamination Sampling Procedures and Guidelines

To determine whether the property is “fit for use,” the owner shall cause the site to be sampled and tested for the substances specified in this guidance, using the procedures and laboratory services specified in this section. The property owner shall inform the laboratory that the

sampling and testing are related to property that has been determined to be a CDL, and shall authorize the analytical laboratory to provide copies of laboratory reports to the HEER Office. The property owner must provide this information as a required condition for the HEER Office to issue a "no further action" for the property in question.

The requirements of Chapter 452 of Title 11 are that samples be collected and submitted to an accredited laboratory for analyses. The HEER Office allows for one exception to this requirement: the use of PID readings may be substituted for the Summa® canister results if a qualified sampler takes the readings and provides signed documentation that the "no further action" VOC standard has been met. For this exception, the protocols outlined within this section *must* be followed and the readings in each room *must* be documented and certified by the sampler.

Table 6-2 summarizes the analytical methods to be utilized to confirm that the cleanup standards have been met. Estimated costs are also included.

**TABLE 6-2 ANALYTICAL METHODS, SAMPLE TYPE, AND ESTIMATED SAMPLE COST**

| Contaminant | Sample Type | Analytical Methods | Estimated Cost per Sample |
|---|---|---|---|
| Methamphetamine (Meth) | Wipe or vacuum sample | Laboratory-Specific Methods | $35 to $150 |
| Volatile Organic Compounds (VOC) | Air sample – Summa® canister | Summa® Canister TO-15 | $225 to $300 |
| Lead (Pb) | Wipe or vacuum sample | EPA 3050/6010<br>EPA 3050/6020 | $20 to $40 |
| Mercury (Hg) | Air sample – sorbent tube | NIOSH 6009 | $35 to $50 |

Notes:

EPA United States Environmental Protection Agency.
NIOSH National Institute of Occupational Safety and Health.

VOCs can also be evaluated using a PID or FID survey by a qualified sampler.

Actual sample costs will be based on the laboratory and number of samples submitted.

## 6.6.1 Sample Collection Overview

The HEER Office strongly recommends that the property owner contract a qualified environmental or health professional to conduct sampling and testing. The services of a qualified third party professional will help ensure that sampling and testing activities are objective. See Section 6.5.2.3 for recommendations regarding the hiring of a sampling contractor.

The analytical results obtained via sampling and laboratory analyses will be used to determine the presence and concentration of methamphetamine, VOCs, and lead and mercury (if

necessary – P2P method only) remaining on building surfaces or in air after decontamination activities. The analytical results must show that residual contaminant levels (if any) are below the remedial action levels specified in Table 6-3.

## TABLE 6-3

## REMEDIAL ACTION LEVELS FOR ILLEGAL METHAMPHETAMINE-MANUFACTURING SITES

| Substance | Cleanup Standard |
|---|---|
| Methamphetamine | 0.1 µg/100 $cm^2$ |
| VOCs | 1 ppm of total hydrocarbons and VOCs in air |
| Lead | 2 µg/100 $cm^2$ |
| Mercury | 50 $ng/m^3$ in air |
| Notes:<br>The cleanup standards apply only to illegal methamphetamine-manufacturing sites. HDOH has not developed standards for other types of drug laboratories, such as those for LSD and ecstasy.<br>Lead - This is equivalent to the 20-µg/$ft^2$ standard specified by the State of Washington. A conversion was made to simplify the sampling protocols and to standardize the size of the sampling areas and templates. | |

### 6.6.1.1 Types of Samples

Types of sample collection include, but are not limited to:

- Wipe samples from non-porous surfaces, including walls, fixtures, floors, furniture, and appliances, for methamphetamine and, if necessary, lead
- Vacuum samples from carpets, upholstered furniture, and other surfaces not amenable to wipe sampling
- Air samples from within the residence for VOCs and, if necessary, mercury.

If it is suspected or if there is evidence that chemicals or wastes were dumped outside a residence, the property owner shall notify the HEER Office for additional guidance. Dumping of chemicals outside a residence may affect groundwater, drinking water supplies, surface water, and soil. See Section 6.5.3.6 and the HEER Office TGM and the SCP, as described in HAR Chapter 11-451, authorized by HRS 128D, the Environmental Response Law for guidance.

### 6.6.1.2 Basic Sampling Protocols

All sample collection shall be performed using standards and protocols to ensure:

- Accuracy, which is the ability to produce similar results with repeated sampling.
- Proper wipe-, vacuum-, or air-sampling techniques to collect a representative sample of the area being sampled.
- Proper care and prudent action to avoid cross-contamination during sampling (e.g., changing gloves between sample locations).

- Proper storage and preservation of samples until they are transported to the laboratory for analysis. Samples should be placed in a cooler with gel ice to keep them cool. The HEER Office recommends that the samples and gel ice be double bagged (separately) in Ziploc® bags to prevent the labels from being damaged by moisture. Sufficient gel ice should be included in the cooler to keep the samples cool in transit to the laboratory.

In addition, the property owner shall keep the samples in a secure (i.e., locked) location until they are shipped or delivered to the laboratory. Samples shall be held only for a few days after collection to ensure that holding time requirements specified in Table 6-7 are not exceeded. For example, the holding time for methamphetamine wipe samples is 14 days. The HEER Office recommends that the samples be shipped to the laboratory within 2 to 3 days after being collected to ensure that the laboratory receives them several days before the 14-day holding time occurs.

All samples collected, transported, stored, and analyzed shall be accompanied by the laboratory chain of custody. The property owner or contracted professional should maintain it for the purposes of legal defensibility or other perceived liability.

#### 6.6.1.3 Sampling Equipment

Table 6-4 lists recommended equipment and supplies for conducting verification sampling:

**TABLE 6-4**

**RECOMMENDED EQUIPMENT AND SUPPLIES FOR CONDUCTING VERIFICATION SAMPLING**

| Equipment/Supplies Obtained from a Certified Laboratory or Sampling Supplier | Equipment/Supplies Obtained from Retail Stores |
|---|---|
| • Sample jars (wipe samples)<br>• Conical tubes (vacuum samples)<br>• Sample wipes<br>• Wetting agent(methanol for methamphetamine wipes; nitric acid for lead wipes)<br>• Labels for sampling jars<br>• Summa® canisters (VOC samples)<br>• Sorbent tubes (mercury samples)<br>• Sampling templates (10 cm x 10 cm)<br>• Cooler(s)<br>• Gel ice | • Field notebook<br>• Sampling gloves (nitrile)<br>• Masking tape<br>• Permanent ink marking pens<br>• Ziploc® bags<br>• Camera & film<br>• Paper towels<br>• Trash bags<br>• Personal protective equipment<br>• Bubble wrap<br>• Packaging tape |
| Source: *Adapted from Guidelines for Contamination Reduction and Sampling at Illegal Drug Manufacturing Sites (WDOH 1996).* | |

## 6.6.2 Methamphetamine Sampling and Testing

The current EPA analytical method used to detect methamphetamine is 8270C-Modified. For lead, the method is EPA Method 6020. Portable analyzers with gold film absorption systems are available for mercury vapor detection. The HDOH recognizes that science and technology are constantly refining analytical procedures and instrumentation. Therefore, any proven and defensible analytical methodology/technology that has a detection level lower than the Remedial Action Level numbers can be employed. These alternate analytical methods must be thoroughly documented to ensure that data results are defensible.

Methamphetamine sampling and testing will be conducted using the wipe and/or vacuum-sampling protocols adapted from USEPA Publication EPA 747-R-95-001, Residential Sampling for Lead Protocols for Dust and Soil Sampling (EPA 1995), as they apply to this guidance. Simplified wipe- and vacuum-sampling protocols are provided as Appendix XVI and Appendix XVII, respectively, to this guidance.

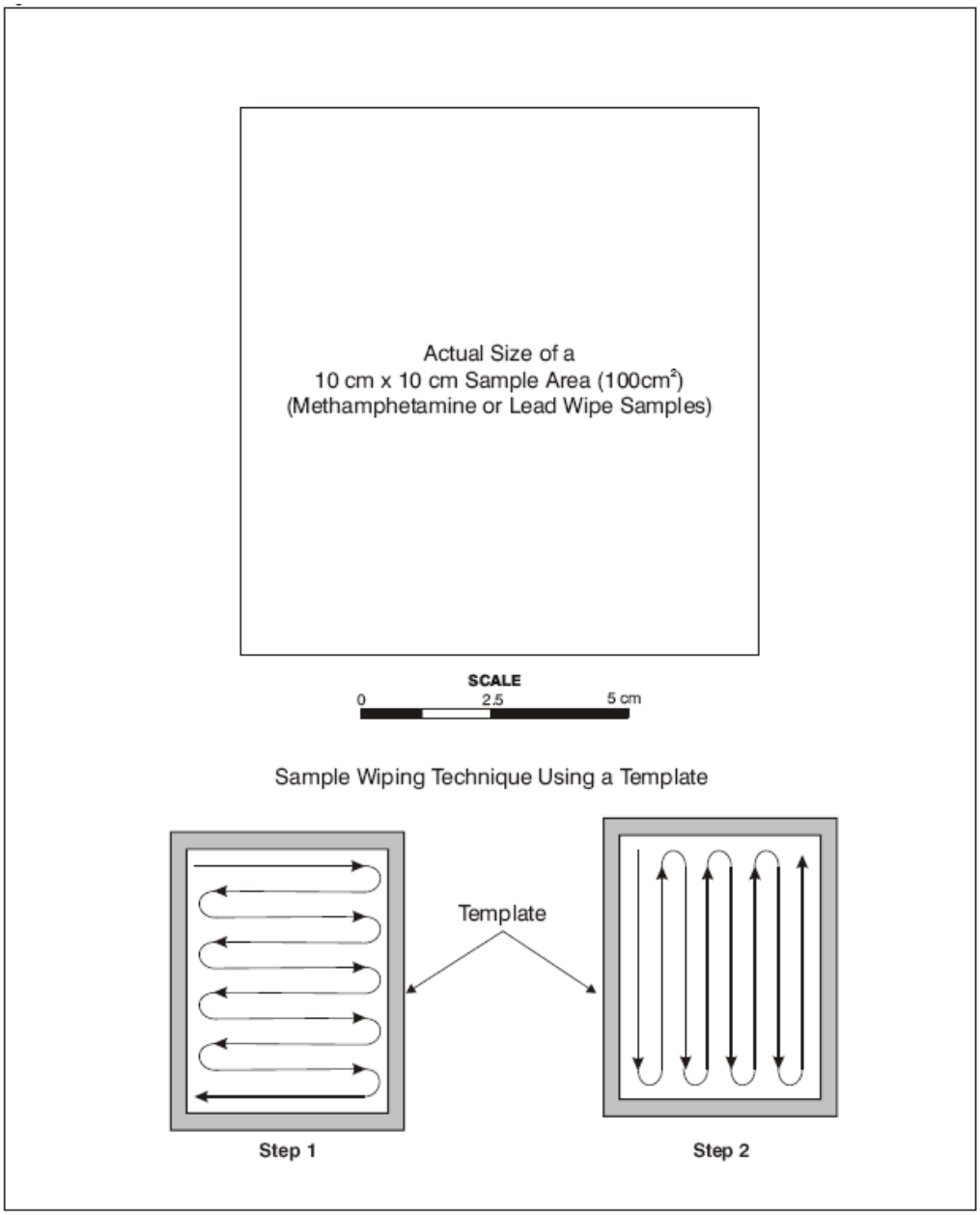
To summarize, wipe samples are achieved using reagent-grade, methanol wetted,100-$cm^2$ cotton gauze or filter paper wipes from various 100-$cm^2$ surfaces, wiping the surfaces with the wetted wipe in the manner prescribed by the protocols. Figure 6-2 illustrates the actual size of a 100-$cm^2$ sample area and the technique to be used to wipe the area.

Property owners may chose between collecting wipes samples from up to four different locations and combining these wipes into one composite sample, or collecting and analyzing discrete samples from each of the same locations described for the composite samples. Collecting and analyzing discreet samples provides specific information about the locations that may need additional decontamination if the sample result is above the standard. On the other hand, if a composite sample result is above the standard, all locations that were wiped and composited into one sample will require additional decontamination. The potential for additional decontamination must be weighed against the cost benefit of the reduction in lab costs for analysis of multiple discrete samples. If the property owner decides to utilize the composite sample option, that individual is advised to ensure that the sample results provided from the lab are corrected to the units of µg/100 $cm^2$.

The following paragraphs describe the number and location of final confirmation samples that will require laboratory analyses.

## Figure 6-2

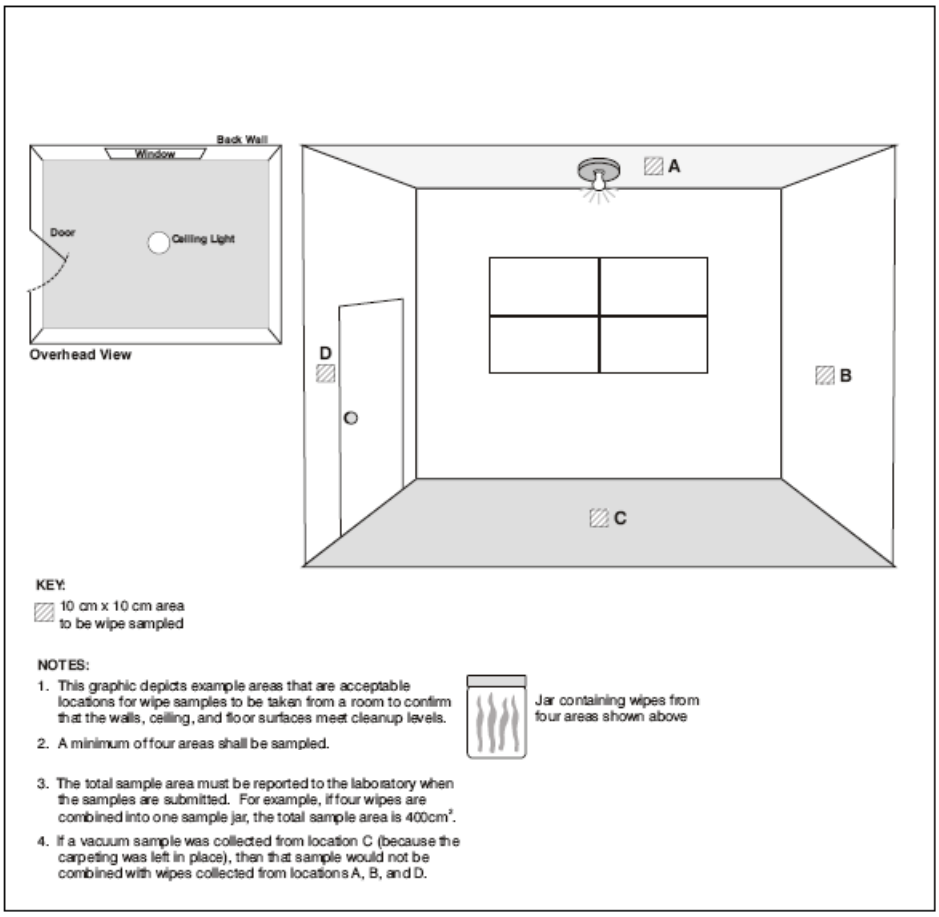
## Wipe Sample Area and Sampling Technique




**Room Sample**: In each room within the property known or suspected to be contaminated with methamphetamine, four 10-cm by 10-cm areas (a total of 400 $cm^2$) shall be wipe sampled from the following locations: the non-porous floor, the ceiling, and two walls. This includes all rooms at the property. These four wipes may be combined or composited into one sample for every room. Figure 6-3 provides an example of wipe sample locations for methamphetamine and/or lead analyses on ceilings, walls, and floors.

## Figure 6-3

## Example Ceiling, Floor, and Wall Sampling Locations for Composite Wipe Samples for Methamphetamine and/or Lead

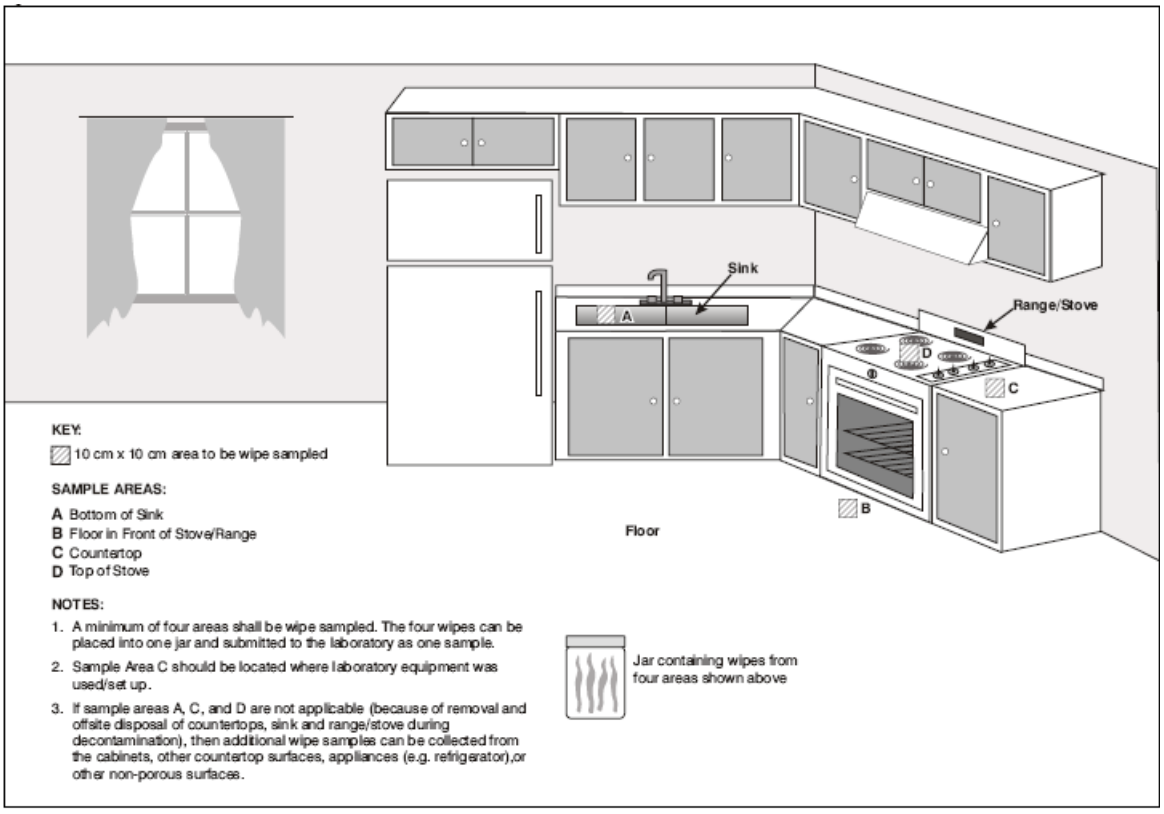



**Kitchen Sample**: In addition to the room sample, if there is a kitchen on the property, four additional 10-cm by 10-cm areas (a total of 400 $cm^2$) shall be wipe sampled from a combination of the countertop, sink, stove top, and floor in front of the stove top. If the stove or cook top has been removed as recommended, a sample shall be collected from the vent hood or, lacking a vent hood, from a cabinet in the immediate vicinity of the stove's location. The four wipes may be combined or composited into one kitchen sample. Figure 6-4 provides an example of kitchen wipe sample locations for methamphetamine and/or lead analyses. (Wipes from newly replaced appliances shall not be included in the sample.)

**Bathroom Fixture Sample**: In addition to the room sample, if there is a bathroom on the property, four additional 10-cm by 10-cm areas (a total of 400 $cm^2$) shall be wipe sampled from a combination of the countertop, sink, toilet, and shower/bathtub. These four wipes may be combined or composited into one bathroom fixture sample. Figure 6-5 provides an example of bathroom fixture wipe sample locations for methamphetamine and/or lead analyses. (Wipes from newly replaced fixtures shall not be included in the sample.)

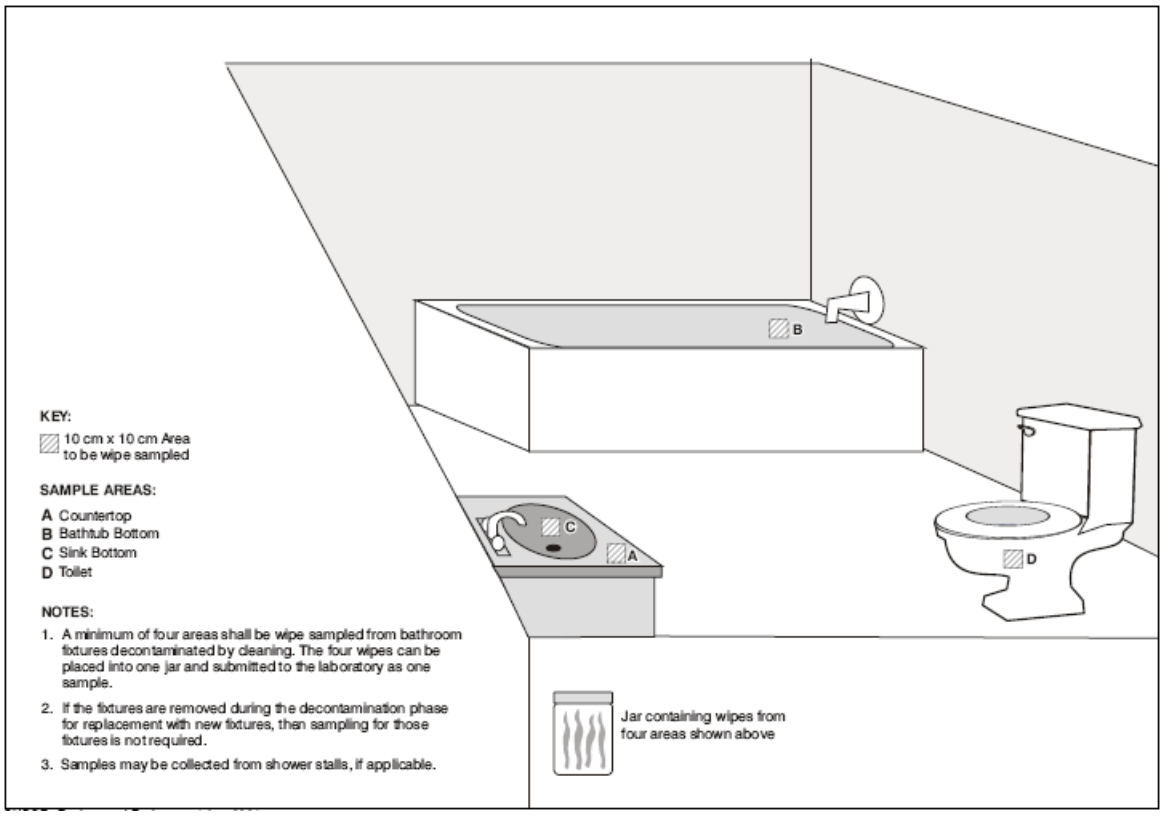
## Figure 6-4

## Example Kitchen Sampling Locations for Composite Wipe Samples for Methamphetamine and/or Lead



## Figure 6-5

## Example Bathroom Sampling Locations for Composite Wipe Samples for Methamphetamine and/or Lead



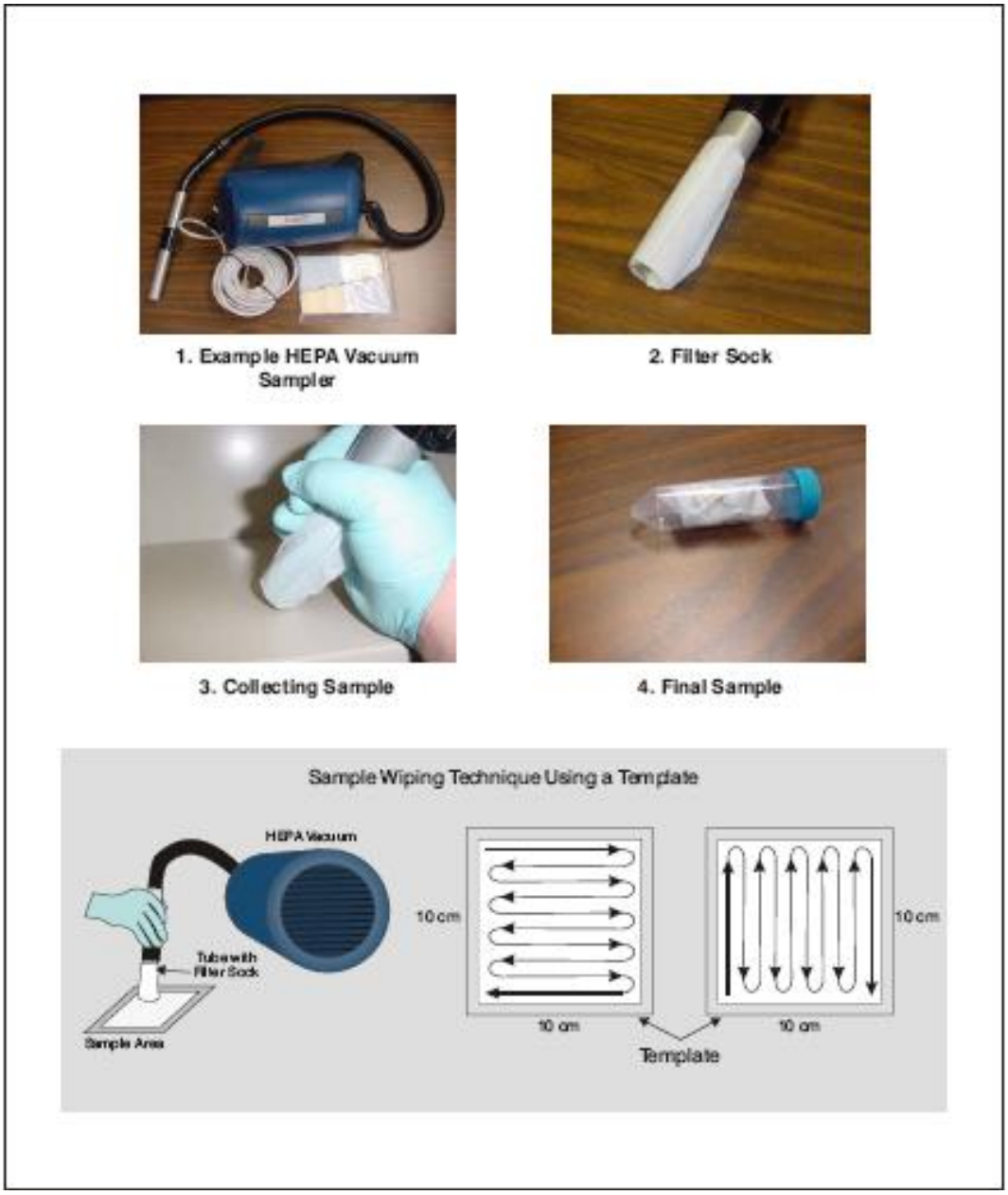

Vacuum samples may be more appropriate for some of the samples required above if porous materials are present on ceilings and floors (i.e., acoustical ceilings and carpeting). Carpets and other coarse surfaces that have been decontaminated shall be sampled using a vacuum-sampling system, as described in Appendix XVII. Vacuum samples may be collected utilizing an air sampling pump, which draws the sample through a collection nozzle and filter sock from coarse 100-$cm^2$ surfaces such as carpets or coarse-textured walls or ceilings. Figure 6-6 provides an illustration of vacuum-sampling equipment and technique.

**Ventilation Sample**: In addition to the samples discussed above, four 10-cm by 10-cm areas (a total of 400 $cm^2$) shall be wipe sampled at different locations in the ventilation system. These four wipes may be combined or composited into one sample.

**Appliance Sample**: If there are any cleaned appliances on the property (e.g., refrigerator), one 10-cm by 10-cm area (100 $cm^2$) shall be wipe sampled from the exposed portion of each appliance. If multiple appliances are present, up to four wipes may be combined or composited into one appliance sample (for a total of 400 $cm^2$ per sample).

## Figure 6-6

## HEPA Vacuum Sampling Illustration




After sampling, the single or multiple wipes, or single or multiple vacuum filter socks, shall be placed in a new clean sample jar (wipes) or conical sample tube (vacuum filter socks) and sealed with a Teflon-lined lid. Vacuum samples cannot be combined with wipe samples for laboratory analysis.

The sample containers shall be properly labeled with at least the site name or project identification number, date, time, actual sample location, and total size of the sample area. The

sample containers shall be placed in individual, sealed Ziploc® bags, and placed in a cooler with gel ice and maintained until delivered to an analytical laboratory.

## 6.6.3 Volatile Organic Compound Sampling and Testing

Conformance to the VOC cleanup standard (1 ppm total VOCs) may be achieved by one of the following methods:

- Use of a flow-regulated SUMMA® canister for sampling with subsequent laboratory analyses
- VOC survey via a calibrated PID or FID conducted by a qualified environmental sampler.

While use of a PID or FID by property owners is acceptable for screening purposes, the protocols for VOC cleanup confirmation using a PID or FID require knowledge and experience of the instrumentation. For this reason, a qualified sampler is required if this option is used to confirm that the VOC cleanup standard is met. Due to the expense involved with TO-15 sampling and analyses, contracting of a qualified sampler may in fact be the more cost-effective option. In addition, the TO-15 sampling and analysis method is more sensitive, and it may be difficult to achieve the 1 ppm cleanup standard with this method because of the presence of VOCs not related to an illegal meth lab operation (e.g., VOCs from carpeting, paints, foam insulation, etc.).

New carpets, paints, and some cleaners may yield positive results on PID and FID instruments as well. For this reason VOC sampling (by either method) must occur after decontamination (i.e., cleaning) activities are completed and prior to the use of any paints or encapsulants, or the addition of new carpeting, flooring, or adhesives to the property. After decontamination and before commencement of VOC sampling activities, venting the residence for 24 to48 hours is recommended in order to “air out” any remaining detergent or other decontamination agents. The premises shall be heated to at least 75$^{o}$ F during this ventilation procedure. However, ventilation must not be performed during VOC sampling using the methods described in Sections 6.6.3.1 and 6.6.3.2.

Prior to VOC sampling, the property shall remain closed (doors, windows), without ventilation, for at least 8 hours and returned to a temperature of 70$^{o}$ F in order that the property may come to equilibrium for testing.

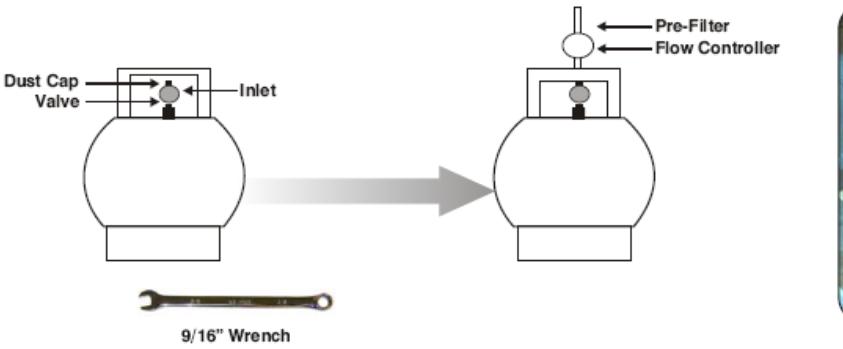
### 6.6.3.1 TO-15 SUMMA® Canister VOC Sampling

Final VOC confirmation sampling shall be conducted in the center of the room that contained the former drug laboratory activities. Although not required, The HEER Office recommends that additional samples be collected from all rooms considered heavily contaminated.

Simplified sampling protocols adapted from EPA Method TO-15 are included in Appendix XVIII. A Summa® vacuum gas cylinder is placed in the room, a flow device is attached with a small wrench, and the valve is opened, allowing a time-weighted average sample of the air to be obtained over a period of 8 to 12 hours. The sampler notes the time of sampling, and after closing the valve and removing the flow controller, ships the canister to the laboratory for analyses. Figure 6-7 provides an illustration of VOC sampling using a Summa® canister.

## Figure 6-7

## VOC Sampling Using a Summa® Canister




1. Remove dust cap from the valve of the Summa® canister. Note: If the cap is loose, this does not mean that the canister leaked during transit.
2. Attach the flow controller to the cylinder inlet, turning the threaded nut until it is hand tight.
3. Use a 9/16 inch wrench to tighten the nut. Turning 1/4 to 1/2 turn beyond hand tight is sufficient.
4. Complete sample label. If using your own label, please do not cover up or remove canister information tag.
5. To initiate sampling event, turn valve counterclockwise, one and 1/2 or two turns.
6. Note start time. The valve must be closed at the endpoint (i.e., 8 to 12 hours) by turning clockwise until snug.
7. If the valve is not closed at the end point the canister will eventually go to ambient pressure. If this happens, the sample cannot be used.
8. After closing the valve, **remove the flow controller from the canister**, replace the dust cap and return both to the laboratory in the containers in which they were received.
9. Note that the flow controllers are not to be adjusted in the field.
10. Do not remove the canister information tag for any reason, this is a record of the canister's certification.

Source: Severn Trent Laboratories

### 6.6.3.2 PID/FID VOC Survey

Confirmation VOC survey utilizing a properly calibrated PID or FID by a qualified sampler may be employed in lieu of Method TO-15. A properly operating PID or FID will yield near-zero ppm readings in clean air, and will yield substantial evidence (20, 50, or 100+ ppm) in the presence of solvents.

When using this method, the PID or FID must be calibrated using a low concentration calibration gas (0- to 10-ppm range). Calibration of the PID and/or FID must be verified before and after the survey. A certified 10-ppm isobutylene calibration gas shall be used for calibration. Acceptable criteria shall be +15% of the certified calibration gas standard. Note: Conventional use of these instruments often employs a 100-ppm calibration gas standard. The 10-ppm gas standard does not cost more than a 100-ppm calibration gas standard. The use of this low concentration standard is required because the cleanup standard is 1 ppm total VOCs (as isobutylene). Low calibration standards shall not exceed 10 times the associated cleanup standards. Note: Many commercial PIDs or FIDs will achieve +15% low standard QC criteria; however, some may not. The low range sensitivity of these instruments is based upon the specifications of the instrument—i.e., sample gas flow, sample path length, size and intensity of the PID or FID source, and solid-state sensitivity of the instrument's photomultiplier.

Testing shall occur in each room of the affected property. Initially, directed survey of areas of possible storage, use, spillage, or disposal associated with the former drug lab should be conducted using the PID or FID in each location for at least 1 minute (VOC vapors may not be detected by the PID or FID otherwise), and the highest reading obtained should be recorded.

Any positive reading above natural background may indicate the presence of solvent-contaminated materials requiring further removal and/or decontamination.

In the event positive readings are encountered, the source of VOCs shall be investigated using the instrument as a guide. Some low (i.e., slightly greater than 1 ppm) background VOCs may exist at the property. These may be due to resins in building materials, oil-based paints, or external factors such as spilled fuel adjacent to a storage tank, poor septic drainage, tree pollen, or other background source not associated with the former drug lab.

1. In the event "background" VOCs are encountered, the qualified sampler will substantiate background concentration with detailed documentation. With HEER Office approval, a site-specific VOC standard equaling 1 ppm plus background may be achieved. While at the site, the qualified sampler may contact the HEER Office if VOCs slightly above the 1-ppm cleanup standard are obtained and no source areas are identified.
2. After completing the directed survey, a room-by-room survey shall occur to confirm that the areas away from documented lab activities are below the cleanup standard. The initial survey should occur in the center of the room for a period of 3 minutes. The PID or FID is held 3 feet above the floor (the height of a small child's breathing zone). The highest reading observed during this time is recorded.
3. Next a survey along the walls of the room shall occur, with readings achieved every 5 feet for a period of 1 minute. Again the highest reading achieved during this period is recorded.
4. All inaccessible drains or plumbing traps not replaced during decontamination shall be tested for VOCs by holding the testing equipment probe in the plumbing pipe above the trap for at least 1 minute, and the highest reading should be recorded.

Upon completion of the VOC survey, the qualified environmental sampler shall prepare a brief report, inclusive of all findings and calibration data. The sampler shall certify his/her findings. The certified VOC survey report shall be included with other deliverables to the HEER Office.

## 6.6.4 Lead Sampling and Testing

If there is clear evidence that lead and/or chemicals containing lead were used in the manufacture of methamphetamine (P2P method only), lead sampling and testing is required. This is conducted in a manner similar to methamphetamine wipe sampling (Appendix XVI); however, the cotton gauze wipe should be wetted with reagent-grade nitric acid rather than with methanol. Sample areas for lead shall not be co-located with sample areas for methamphetamine (i.e., the same area shall not be wiped with both methamphetamine and lead wipes). The sample areas for lead shall be adjacent to the sample areas for methamphetamine.

Field screening using a portable XRF is recommended. XRFs may be utilized to identify and delineate the extent of lead contamination, and to determine lead background levels. The XRF should be operated in accordance with manufacturer's specifications.

## 6.6.5 Mercury Sampling and Testing

If there is clear evidence that mercury was used in the manufacture of methamphetamine at the clandestine drug lab (P2P method only), mercury sampling and testing is required and shall be conducted using National Institute of Occupational Safety and Health (NIOSH) Method 6009. This method involves the use of a sample pump drawing an air sample through a sorbent tube that is subsequently analyzed by a laboratory. Figure 6-8 provides an illustration of mercury sampling using a sample pump and sorbent tube.

Final mercury confirmation sampling and analyses shall be performed in the center of the room that contained the former illegal methamphetamine laboratory. Although not required, the HEER Office recommends that additional samples be collected from all rooms considered heavily contaminated. Sampling and analyses shall be performed in accordance with the protocols prescribed by NIOSH Method 6009. Simplified protocols are provided in Appendix XIX.

## 6.6.6 Number of Samples to be Collected and Analyzed

Because each meth lab site is different, the number of samples to be collected will vary based on the number of rooms within the building, whether fixtures and appliances were decontaminated for reuse, and other factors.

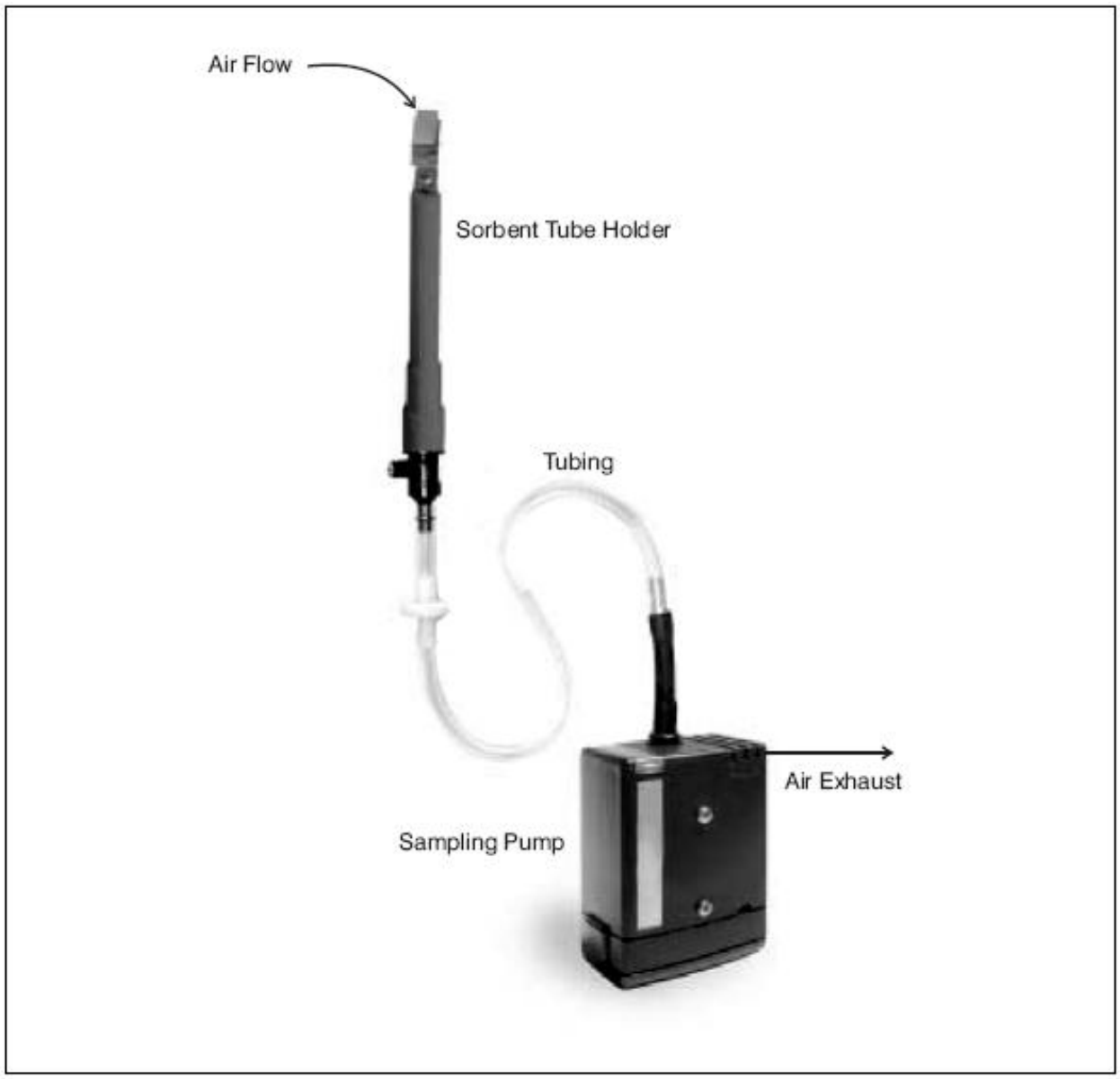
Table 6-5 provides a summary of the samples that should be collected if a meth lab is documented in the example residence shown in Figure 6-1. The table assumes that either the birch or red phosphorus method of drug manufacturing was used (i.e., lead and mercury testing not required), and that up to four major appliances were decontaminated for reuse. This example also assumes that the laboratory equipment and chemicals were located in the kitchen and that some chemical mixing operations also occurred in the bathroom (based on information gathered by law enforcement during the drug bust).

Each sample sent to the laboratory shall be assigned a unique identification number (i.e., sample ID). The locations of the sub-samples should be documented in a field notebook. Example sample ID numbers are included in Table 6-5.

If the amalgam/P2P method was documented at the example residence shown in Figure 6-1, additional samples would be collected for lead and mercury analysis. Table 6-6 summarizes the number of samples that would be collected for lead and mercury.

## Figure 6-8

## Example Sampling Pump for Mercury Sampling Using a Sorbent Tube



## TABLE 6-5

## NUMBER, TYPE, AND LOCATION OF SAMPLE AREAS FOR EXAMPLE 2-BEDROOM RESIDENCE METHAMPHETAMINE AND VOC SAMPLES

| No. | Room | Sample ID | Sample Type | Sample Areas | Total Sample Size |
|---|---|---|---|---|---|
| *Methamphetamine Samples* | | | | | |
| 1 | Living Room | LVR01 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 2 | Bedroom A | BRA01 | Composite wipe | Ceiling and two walls[1] | 300 $cm^2$ |
| 3 | Bedroom B | BRB01 | Composite wipe | Ceiling and two walls[1] | 300 $cm^2$ |
| 4 | Bedrooms A and B | BRAB01 | Composite vacuum sock | Carpet in each bedroom[1] | 200 $cm^2$ |
| 5 | Utility Room | UTR01 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 6 | Kitchen | KTN01 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 7 | Kitchen | KTN02 | Composite wipe | Kitchen counter, floor in front of range/stove, cabinet shelf, and bottom of sink[2] | 400 $cm^2$ |
| 8 | Bathroom | BATH01 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 9 | Bathroom Fixtures | BATH02 | Composite wipe | Bathtub, sink bottom, countertop, and toilet | 400 $cm^2$ |
| 10 | Hallway | HALL01 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 11 | Garage | GAR01 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 12 | Ventilation System | HVAC01 | Composite wipe | Air register, ductwork (2 locations), air intake | 400 $cm^2$ |
| 13 | Appliances | APPL01 | Composite wipe | Refrigerator, dishwasher, washer, dryer | 400 $cm^2$ |
| *VOC Samples* | | | | | |
| 1 | Kitchen | KTN03 | Summa® canister | Kitchen (where lab equipment was documented) | 8-12 hours |
| 2 | Bathroom | BATH03 | Summa® canister | Bathroom (second heavily contaminated area)—optional | 8-12 hours |

Notes:

$cm^2$ = Square centimeters.
VOC = Volatile organic compound.
[1] For this example, the carpeting in the two bedrooms was left in place and cleaned. Vacuum samples were collected from the carpeting to confirm that the cleanup level was met.
[2] For this example, the range/stove was removed and disposed of off site, so a cabinet shelf was wipe sampled instead of the range/stove.

## TABLE 6-6

## NUMBER, TYPE, AND LOCATION OF SAMPLE AREAS FOR EXAMPLE 2-BEDROOM RESIDENCE LEAD AND MERCURY SAMPLES

| No. | Room | Sample ID | Sample Type | Sample Areas | Total Sample Size |
|---|---|---|---|---|---|
| *Lead Samples* | | | | | |
| 1 | Living Room | LVR02 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 2 | Bedroom A | BRA02 | Composite wipe | Ceiling and two walls[1] | 300 $cm^2$ |
| 3 | Bedroom B | BRB02 | Composite wipe | Ceiling and two walls[1] | 300 $cm^2$ |
| 4 | Bedrooms A and B | BRAB02 | Composite vacuum sock | Carpet in each bedroom[1] | 200 $cm^2$ |
| 5 | Utility Room | UTR02 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 6 | Kitchen | KTN04 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 7 | Kitchen | KTN05 | Composite wipe | Kitchen counter, floor in front of range/stove, cabinet shelf, and bottom of sink[2] | 400 $cm^2$ |
| 8 | Bathroom | BATH04 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 9 | Bathroom Fixtures | BATH05 | Composite wipe | Bathtub, sink bottom, countertop, and toilet | 400 $cm^2$ |
| 10 | Hallway | HALL02 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 11 | Garage | GAR02 | Composite wipe | Ceiling, floor, and two walls | 400 $cm^2$ |
| 12 | Ventilation System | HVAC02 | Composite wipe | Air register, ductwork (2 locations), air intake | 400 $cm^2$ |
| 13 | Appliances | APPL02 | Composite wipe | Refrigerator, dishwasher, washer, dryer | 400 $cm^2$ |
| 14 | Background | RR01 | Wipe | Consult HEER Office | 100 $cm^2$ |
| *Mercury Samples* | | | | | |
| 1 | Kitchen | KTN06 | Sorbent tube | Kitchen (where lab equipment was documented) | |
| 2 | Bathroom | BATH06 | Sorbent tube | Bathroom (second heavily contaminated area)—optional | |

Notes:

$cm^2$ = Square centimeters.
[1] For this example, the carpeting in the two bedrooms was left in place and cleaned. Vacuum samples were collected from the carpeting to confirm that the cleanup level was met.
[2] For this example, the range/stove was removed and disposed of off site, so a cabinet shelf was wipe sampled instead of the range/stove.

## 6.6.7 Sample Containers and Holding Requirements

Table 6-7 summarizes the analytical methods, detection limits, container descriptions, preservatives, and holding times for each analytical method. For example, methamphetamine wipe samples have a 14-day holding time. This means that the laboratory must test the sample within 14 days of the sample collection date.

With the exception of the Summa® canister, all samples should be cooled to 4+/-2$^0$C (4$^0$+/-4$^o$F), and that temperature should be maintained until the laboratory takes possession of the samples. Failure to properly preserve samples may result in data not considered valid by the HEER Office. When shipping samples to an out-of-state laboratory, use an overnight shipping service (e.g., FedEx) to ensure that the required temperature range will be maintained.

## 6.6.8 Documentation of Sampling Activities

The HEER Office strongly recommends that the property owner or owner's contractor collect and maintain documentation of sampling activities. Photographs of sampling areas and sample jars are also recommended.

## 6.6.9 Sample Testing

Collected samples must be submitted to a laboratory for testing (i.e., analysis). Note: Most environmental laboratories do not routinely conduct analysis for methamphetamine. Currently, no commercial Hawaii laboratories conduct methamphetamine analysis routinely. Likewise, analysis of VOC air samples is a specialty performed routinely by a small number of laboratories.

The sampler must indicate the total sample area size when requesting analysis of composite wipe samples for methamphetamine or lead. The analytical laboratory can report sample results into the units specified by the cleanup standards (µg/100 cm$^2$ for methamphetamine and lead wipe or vacuum samples, ng/m$^3$ for mercury samples, and ppm for VOC samples) upon request.

The sampler should use the laboratory's chain of custody when requesting analysis of confirmation samples. It should specify that sample results will be reported in units that match the cleanup standards (e.g., µg/100 cm$^2$ for methamphetamine).

## TABLE 6-7

## REFERENCE GUIDE TO SAMPLE COLLECTION, PRESERVATION, AND LABORATORY ANALYSIS

| Parameter | Analytical Method | Sample Type | MDL[1] | PQL[1] | Container | Preservation/Maximum Holding Time |
|---|---|---|---|---|---|---|
| Methamphetamine | Laboratory-Specific | Wipe | 0.01 µg/100 $cm^2$ | 0.1 µg/100 $cm^2$ | 4-ounce, brown-amber jar with Teflon-lined lid or conical tube[2] | Methanol-wetted wipes, cool to 4°+/-2°C (4°+/-4°F), 14 days |
| Methamphetamine | Laboratory-Specific | Vacuum | 0.01 µg/100 $cm^2$ | 0.1 µg/100 $cm^2$ | Sock filter placed in 4-ounce, brown-amber jar with Teflon-lined lid or conical tube[2] | H2SO4-treated glass fiber filter, cool to 4°+/-2°C (4°+/-4°F), 14 days |
| VOCs | TO-15 | Air | 1.0 ppbv | 10 ppbv | Summa® Canister | 7 days |
| Lead | 3050/6010 | Wipe | 0.02 µg/100 $cm^2$ | 0.2 µg/100 $cm^2$ | 4-ounce, brown-amber jar with Teflon-lined lid or conical tube[2] | 10% $HNO_3$-wetted wipes, cool to 4°+/-2°C (4°+/-4°F), 30 days |
| | | | | | | |
| Lead | 3050/6010 | Vacuum | 0.02 µg/100 $cm^2$ | 0.2 µg/100 $cm^2$ | 0.8-µm or sock filter placed in 4-ounce, brown-amber jar with Teflon-lined lid or conical tube[2] | Cool to 4°+/-2°C (4°+/-4°F), 30 days |
| Mercury | 6009 | Air | 0.6 ng/$m^3$ | 6 ng/$m^3$ | SKC 226-17-1A | Cool to 4+20C (40+4oF), 14 days |
| | | | | | Sorbent Tube or equivalent | |
| 1 | Method detection limit (MDL) and practical quantization limit (PQL) based on data quality objective (DQO) criteria, when achievable, where MDL = 10 × DQO and PQL = 10 × MDL. Actual MDL based on laboratory studies in accordance with 40 *Code of Federal Regulations* 136. | | | | | |
| 2 | Conical tube = 50- or 100-milliliter sterile plastic centrifuge tube | | | | | |

**TABLE 6-7 (Continued)**

**REFERENCE GUIDE TO SAMPLE COLLECTION, PRESERVATION, AND LABORATORY ANALYSIS**

| Parameter | Analytical Method | Sample Type | MDL[1] | PQL[1] | Container | Preservation/Maximum Holding Time |
|---|---|---|---|---|---|---|
| | $cm^2$ = Square centimeter<br>C =Celsius<br>$m^3$ = Cubic meter<br>F = Fahrenheit<br>ng = Nanogram<br>$HNO_3$ = Nitric acid<br>ppbv = Parts per billion by volume<br>$H_2SO_4$ = Sulfuric acid<br>µg = Microgram<br>VOC = Volatile organic compound | | | | | |

## 6.7 Final Report

The final report should be addressed to the HEER Office POC at the following address:

State of Hawaii
Department of Health
Hazard Evaluation & Emergency Response Office
919 Ala Moana Boulevard, Rm 206
Honolulu, Hawaii 96814

A final report should document the work performed in conjunction with the work plan approved by the HEER Office as addressed in the HEER Office TGM. A final report shall describe the cleanup process in detail sufficient to allow the HEER Office to verify that the decontamination and cleanup have been completed. The final report shall include the following information:

- Results of all sampling
- A comparison of the final sampling results with the appropriate HEER Office remedial action levels
- A summary of the comparison that indicates whether or not the cleanup has met all of the HEER Office appropriate remedial action levels
- All supporting data and information for the cleanup activities performed
- Any other information required by the hazard evaluation and emergency response office.

A suggested format for the final report can be found in Appendix XXII. Other information should be included that is required by the HEER Office TGM. Alternate copies of all portions of the report should be kept by the property owner.

## 6.8 No Further Action Determination

If the HEER Office determines the final report verifies that the cleanup effort has remediated the property in accordance with this plan, and if the HEER Office verifies that the cleanup has met the requirements of the State of Hawaii, HDOH shall issue a No Further Action (NFA) determination.

In order for the HEER Office to make a NFA determination at a site, the response action must be protective of human health and the environment. If the four criteria presented below are met, the HEER Office may make a NFA determination.

- There has been no release of a hazardous substance, pollutant, or contaminant to the environment.
- There is no threat of a release of a hazardous substance, pollutant, or contaminant to the environment.
- The facility is adequately characterized, and either of the following applies:
    - No hazardous substances remain on site.
    - No significant threat to human health or the environment exists.
- Response actions are complete and adequate measures have been taken to protect human health and the environment.

However, if new information subsequently is discovered that changes the HDOH NFA determination, the case shall be reconsidered and possibly reassessed at the owner's expense.

# SECTION 7: APPENDICIES

# APPENDIX I
# BIBLIOGRAPHY


Alaska Department of Environmental Conservation, April 29, 2004, 'Fit-for-Use' Standards for Sites Associated with Clandestine Drug Labs, Proposal and Basis for Alternative Standards.

Arkansas Department of Health. 2004. "*Clandestine Methamphetamine Laboratory Guidance Cleanup Guidelines*." March. On-line address: http://www.healthyarkansas.com/pdf/adh_methguidelines_2004.pdf

Colorado Department of Public Health and Environment. 2003. "*Cleanup of Clandestine Methamphetamine Labs Guidance Document*." July. On-line address: http://www.cdphe.state.co.us/hm/methlab.pdf

Council of State Governments (CSG) in *Drug Abuse in America – Rural Meth* (2004)

Georgia Bureau of Investigation. 2002. "*Clan Lab SOP.*" Revised. July.

Georgia Division of Public Health. No date. "Methamphetamine "Meth" Labs." On-line address: http://health.state.ga.us/pdfs/environmental/chemhazard/methbrocure.05.pdf

Illinois Department of Public Health. No date. "*Methamphetamine Laboratories and Cleanup*." On-line address: http://www.idph.state.il.us/envhealth/factsheets/meth-labs.htm

Illinois Department of Public Health. No date. "*Guidelines for Cleaning Up Former Methamphetamine Labs*." On-line address: http://www.idph.state.il.us/envhealth/factsheets/meth-cleanup.htm#checklist

Iowa Department of Public Health. No date. "*Guidelines for Cleaning Up Former Meth Labs."* On-line address: http://www.idph.state.ia.us/eh/common/pdf/hseess/meth_lab_cleanup.pdf

Kansas Department of Health and Environment. No date. *"Cleaning Up Former Methamphetamine Labs."* On-line address: http://www.kdheks.gov/methlabs/ml_cleanup.html

Kentucky State Police. No date. "State and Federal Investigations of Meth Labs, Part A."

Methamphetamine in Missouri, (2004)

Michigan's Methamphetamine Control Strategy (2002)

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

Missouri State Highway Patrol. 2001. *"Clandestine Drug Laboratories and Chemical Evidence."* February.

Missouri Department of Health and Senior Services. No date. "*Guidelines for Cleaning Up Former Methamphetamine Labs*." On-line address: http://www.dhss.mo.gov/TopicsA-Z/MethLabCleanupGuidelines.pdf

National Alliance for Model State Drug Laws. No date. On-line address: www.doh.state.fl.us/cms/PrevnIntervn/dec/legis/SCRL/STENVIRONCLEANREMEDIATION.pdf)

Nebraska State Patrol. 2002. "*Clandestine Laboratory Operations SOP.*" Revised. May 1.

North Carolina Department of Health. 2004. *"Illegal Methamphetamine Laboratory Decontamination and Re-occupancy Guidelines."* March. On-line address: www.epi.state.nc.us/epi/oii/pdf/methguidelines.pdf

Occupational Safety and Health Administration, 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response regulations.

Ohio Bureau of Criminal Investigation (BCI). 2005. "Clandestine Laboratory Investigation." October 17.

Oklahoma Department of Environment Quality. No date. "*Guidelines for Cleaning Up Former Meth Labs*." On-line address: http://www.deq.state.ok.us/LPDnew/MethLabs/meth.htm

Tennessee Department of Environment and Conservation. 2006. "Reasonable, Appropriate, Protective (RAP) Cleanup Response and Documentation Guidance for Properties Quarantined Because of Clandestine Methamphetamine Laboratory (CML) Activities." June. On-line address: http://www.state.tn.us/environment/dor/pdf/Meth_RAP_Guidance.pdf

United States Drug Enforcement Administration (DEA). 2008 "Hawaii State Factsheet"

United States Environmental Protection Agency (EPA), April 22, 2003, Biological Sampling Procedures Booklet.

_____, January 1999, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition, Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), EPA/625/R-96/010b.

_____, March 1995, Residential Sampling for Lead Protocols for Dust and Soil Sampling, Publication EPA 747-R-95-001.

United States Environmental Protection Agency (EPA), August 2009, Voluntary Guidelines for Methamphetamine Laboratory Cleanup

Washington Office of Environmental Health Assessments, September 2000, Review of Contaminant Levels: Guidelines for Clandestine Drug Lab Cleanup.

Washington State Department of Health, June 1996, Guidelines for Contamination Reduction and Sampling at Illegal Drug Manufacturing Sites.

Washington State Department of Health, Division of Environmental Health. 2005. "*Guidelines for Environmental Sampling at Illegal Drug Manufacturing Sites*." November. On-line address: http://www.doh.wa.gov.ehp/ts/cdl.htm

# APPENDIX II
# CONTAMINATION NOTIFICATION LETTER

**U. S. Department of Justice**
Drug Enforcement Administration
300 Ala Moana Blvd. 3-147
Honolulu, HI, 96813

March 8, 2005

[redacted]

Dear Sir:

This letter was written to advise you, that as the legal owner/manager of the property at, [redacted], that on March 5, 2005 as a result of a search of your property pursuant to a federal search warrant, a clandestine drug laboratory was seized and/or hazardous chemicals were found there. Known hazardous chemicals, materials, and substances were seized by the Government and have been properly disposed of, pursuant to State and/or Federal laws.

This letter also serves as a warning that there may still be hazardous substances or waste products at or on your property. A copy of this letter will be forwarded to the State environmental agency and the County Public Health officials in your area.

Sincerely,

[redacted]
Acting/Assistant Special Agent in Charge

cc: Hazard Evaluation Emergency Response Office
919 Ala Moana Boulevard, Room #206
Honolulu, Hawaii 96814

ASAC Chron

# APPENDIX III
# DATA USABILITY

Data usability and evaluation.

Testing for methamphetamine and determining whether a property is "safe for human use" requires use of hard data and simple statistics. Averages of concentration among composite wipe samples must be calculated and compared to standards. Discreet/grab samples of certain areas are also frequently taken.

Discreet/grab samples.

Discreet samples are those taken of a single area designated with a template and compared to a standard. In discreet sampling, only one wipe is used to sample a single 100-square centimeter ($cm^2$) area, and is then analyzed. The results are reported as the amount collected per 100 $cm^2$.

Discreet samples should be taken of areas of frequent contact such as switch plates, doors, kitchen or bathroom counters, or any surface where people are likely to place hands.

Composite samples.

Composite samples can be used advantageously when considering similar areas (e.g., single rooms or areas such as table and counter tops) that were expected to have similar activity (e.g., cooking, using, storing). Composite samples provide the average value, whereas single samples suggest a possible maximum or minimum (e.g., range) of the observed concentrations. Composite samples are taken of several areas designated by 100-$cm^2$ templates and analyzed together to produce a single result. In composite sampling, up to four wipes from four different templates can be analyzed together. Each template must be used only once, with a separate wipe and set of gloves for each 100-$cm^2$ area of the composite. When results are reported, they are corrected to the total surface area of the entire composite.

As an example, if a room is small, one composite sample may suffice to determine the cleanliness of that room. Four 100-$cm^2$ templates could be placed on the walls and floor of the room. Individual wipes for each template would be taken and placed into the same sample container. The lab would extract the methamphetamine from all wipes and report the total extracted. If the lab reports a total of 0.2 micrograms ($\mu g$) extracted from the four wipes, the corrected result for four 100-$cm^2$ templates would be 0.05 $\mu g/100\ cm^2$, a passing result. That room could be considered cleaned. If, however, the result exceeds 0.1 $\mu g/100\ cm^2$, the room would have to be cleaned again.

A representative sample.

How many samples are necessary to adequately address a residence? This is one of the most important questions for a hygienist to answer. A small room (12 x 12 feet) may need only one four-point composite sample. A larger room (14 x 25 feet) may need three four-point composites. Each room usually needs testing. Discreet samples should

be taken of anything that seems to have a high probability of contact (i.e., eating areas, food storage areas, or any other area to which people are drawn or exposure is likely).

Detection limits.

Detection limits should be documented by the analytical lab and provided along with the results. A result of "non-detect" is not acceptable proof of a successful cleanup if detection limits are greater than the standards for cleanup.

Calibration.

Photo-ionization detectors (PID) and other analytical or screening equipment need periodic calibration. This should be done according the manufacturer's specifications and reported along with any results obtained from that equipment. The expiration dates of any calibration standards such as span gas should be reported as well.

Background.

In some areas, especially near industrial facilities, a baseline or "background" of volatile organic compounds (VOC) may exceed the 1-part-per-million (ppm) standard. In such areas, document outside air conditions with a properly calibrated instrument. Document areas of the structure being tested where readings for VOCs are highest and lowest, and what those readings are. Clean any areas that appear to be above background. When household VOCs are within 1 ppm of background, the structure is considered cleaned to standard.

Remember also that gasoline and power equipment, as well as adhesives, paint, dry-cleaned clothing, solvents, and other volatile household chemicals, should be removed a considerable time before this evaluation because of the probability of these contributing to background VOCs.

Results vs. Standards.

If the concentration of methamphetamine from the wipe samples is less than 0.1 µg/100 $cm^2$, the standard has been met. If a room has a corrected composite sample exceeding 0.1 µg/100 $cm^2$, that room must be cleaned and retested without testing the rest of the building.

In a composite sample, the concentration must be corrected for the surface area of the wipe samples. If a composite sample consists of three wipes taken from three 100-$cm^2$ templates, and the result totals 0.6 µg of methamphetamine, the result is 0.2 µg/100 $cm^2$. Be sure that the analytical lab results are clear, and this point is not confused so as to incorrectly report a sample too high or too low.

Chain of Custody and Sample Preservation.

Chain of custody, sample temperature, and shipping information are important pieces of documentation. They show that samples were shipped with care and that the proper holding temperatures were maintained during shipment. Results of samples collected without this information become suspect.

# APPENDIX IV
# RECOMMENDED METHAMPHETAMINE CLEANUP WEB SITES

To assist property owners and cleanup contractors in furthering their understanding of potential hazards associated with clandestine laboratories (CDL), the following Uniform Resource Locators (URL) are provided as additional resources. The Hawaii Department of Health (HDOH) strongly suggests that property owners and cleanup contractors review these resources before undertaking cleanup responses.

KCI, *The Anti-Meth Site*
http://www.kci.org/meth_info/links.htm

National Jewish Medical and Research Center
http://nationaljewish.org/
Keyword: methamphetamine

Washington State Department of Health
http://www.doh.wa.gov/ehp/ts/CDL/default.htm

Colorado Department of Health and Environment
http://www.cdphe.state.co.us/hm/methlab.pdf
http://www.cdphe.state.co.us/hm/methlabfactsheet.pdf

Minnesota Department of Health
http://www.health.state.mn.us
Keyword: methamphetamine

# APPENDIX V
# RECOMMENDATION OF WORK PRACTICES TO MAINTAIN OFFICER SAFETY

## INTRODUCTION

These recommendations are based on draft guidelines developed by the California Department of Justice Bureau of Narcotics Enforcement. The objectives of these recommendations are to improve the safety of clandestine drug lab law enforcement investigators through avoidance of chemical exposure or, at a minimum, reduce chemical exposure to acceptable levels. Safe clandestine laboratory investigations are accomplished through phased investigation procedures, information gathering and evaluation, and proper selection and use of personal protective equipment.

As part of this program, a Lab Safety Committee should be established to ensure compliance with applicable federal and state Occupational Safety and Health Administration (OSHA) regulations and to continually update the health and safety program as conditions and regulations change.

## ROLES AND RESPONSIBILITIES

The roles and responsibilities section has been divided into two categories. The first category consists of law enforcement personnel including an On-Site Supervisor, Case Agent, and Site Safety Officer. The second category consists of scientific support personnel including Criminalists, Laboratory Technicians, and Latent Print Analysts. Finally, safety guidelines have been included for all personnel responding to the clandestine laboratory site.

## ON-SITE SUPERVISOR

- The On-Site Supervisor shall be a laboratory safety certified law enforcement officer who has also completed the eight-hour Health and Safety Supervisor's training course.
- Ensures that the provisions of this manual are adhered to by all personnel.
- Ultimate authority at the scene.
- Responsible to report unusual occurrences to immediate supervisor and the Clandestine Laboratory Coordinator.
- Ensures completion of all appropriate reports/forms in a timely manner.
- Directs all phases if Case Agent is not laboratory safety certified.

## CASE AGENT

- Directs all phases (if laboratory safety certified).
- Assigns and directs Site Safety Officer during all phases of the investigation.
- Ensures procedures outlined in the manual are followed by all personnel.
- Works with the criminalists and latent print analysts in determining what items of evidence are sampled.

- Completes all appropriate reports in a timely manner.
- Ensures that the evidence will be transported from the analyzing laboratory to the storage location.
- Ensures proper notification of the county health department and the property owner.
- Ensures that all personnel are briefed on safety issues related to the investigation.
- Responsible for notifying hazardous waste hauler.

## SITE SAFETY OFFICER (SSO)

- The Case Agent shall appoint one laboratory safety certified law enforcement officer or industrial hygienist to act as the site safety officer.
- Responsible for health and safety at the site.
- Ensures that HARP form is completed and submitted.
- If necessary, ensures that two laboratory safety certified individuals are designated to be available in the immediate area to enter with a self-contained breathing apparatus (SCBA) and/or any other necessary equipment in case of an emergency. Only SCBA providing at least 30 minutes of breathing air and operated in the positive pressure mode will be used to enter unknown atmospheres or atmospheres containing known hazardous contaminants that require the use of an SCBA. The exception to this recommendation is the entry phase of illegal drug laboratory investigation when the need for greater mobility to arrest suspects supports the use of lighter weight tanks with shorter duration of air supply, except in the case of confined space entry.
- Ensures that emergency first aid equipment is available for immediate use at the site (i.e., first aid kit, eye wash, shower).
- Ensures that the laboratory environment is tested for atmospheric hazards including low oxygen content and explosive concentrations of gases.
- Ensures the proper selection and use of personal protective equipment and that replacement equipment is available.
- Notifies personnel of on-site changes that could affect safety (i.e., weather).
- Ensures that all contaminated disposable equipment is removed by the waste hauler.
- Ensures that non-disposable equipment is decontaminated or packaged for transfer to another site for decontamination.
- Establishes work zones and ensures that they are respected based upon information obtained through a combination of direct reading instruments and his/her observation.
- Ensures that adequate lighting is available to perform all required tasks safely.
- Ensures chemical spill material is available.

## CRIMINALISTS

- Two scientific support personnel should respond to a clandestine laboratory location; one must be a criminalist versed in chemical procedures used in illicit drug manufacturing.

- Criminalists shall work with the case agent to determine what items of evidence shall be sampled.
- Criminalists should collect an ounce of sample per inner container (40 CFR 173.4).
- Criminalists are responsible for ensuring that all sampling materials are brought to the scene.
- ONLY criminalists shall sample evidence unless otherwise authorized;

## LABORATORY TECHNICIANS

- Laboratory technicians responding to a clandestine laboratory scene shall meet all of the requirements for laboratory safety certification.
- Assist criminalist in sampling, packaging, and transportation of evidence.

## LATENT PRINT ANALYSTS

- Latent print analysts should not process a clandestine laboratory scene unless a clandestine laboratory experienced criminalist is present.
- Latent print analysts consult with the site safety officer for appropriate safety and respiratory protection equipment.

## ALL PERSONNEL

- All personnel working at a clandestine laboratory site shall use the level of personal protection established by the Site Safety Officer.
- Prior to eating, drinking, or smoking, all personnel shall follow decontamination procedures.
- All personnel shall report any observed safety hazards immediately to the Site Safety Officer.
- All personnel shall follow decontamination procedures prior to leaving the scene.
- All clandestine laboratory personnel shall participate in a medical surveillance program provided by their employer.
- All personnel shall complete the minimum required training outlined in this manual prior to participating in clandestine laboratory pre-assessment, assessment, or processing phases of the investigation.
- All personnel using personal protective equipment are required to ensure their equipment is in safe working condition.

## TRAINING REQUIREMENTS

All personnel working on site who may be exposed to hazardous substances, health hazards, or safety hazards shall receive training before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards. The following classes are required are for all personnel who will be working clan labs.

**Safety Certification (40-hour)** Provides the basic understanding of health and safety issues pertaining to a clandestine drug lab. This includes the recognition, evaluation, and control of chemical and physical hazards, air monitoring instrumentation, and utilization of personal protective equipment.

**Safety Refresher Training (8-hour)** Required annually to review the topic of health and safety at clan labs, and to discuss any new health and safety concerns with the manufacture of illicit drugs.

**Supervisor Training (8-hour)** Required for all clan lab supervisors or agents at a clan lab scene who have to act as the on-scene supervisor, or persons who supervise personnel responding to clan labs. Emphasis is placed on legal issues of supervising a lab crew when working with hazardous chemicals and dangerous situations.

**On-The-Job (OJT) Training** Required after successful completion of the safety certification course. Twenty-four hours of OJT are required under direct supervision of a lab-certified site supervisor. Individuals become clan lab safety certified once they have completed the 40-hour safety certification course and 24 hours of OJT. Upon completion of the OJT, each individual receives a written certificate, verifying the individual is certified to work at clandestine drug labs.

All agents are required to complete First Aid and CPR training. A summary of training requirements is presented in the training matrix below.

**TABLE V-1**
**TRAINING MATRIX**

| Training Matrix | | | | | | |
|---|---|---|---|---|---|---|
| Course Title | On-Site Supervisor | Case Agent | Site Safety Officer | Criminalist | Lab Technician | Latent Print Analyst |
| Safety Certification | **M** | **M** | **M** | **M** | **M** | **M** |
| 3-day OJT | **M** | **M** | **M** | **M** | **M** | **M** |
| Supervisor's Training | **M** | **X** | **X** | **X** | **X** | **X** |
| Annual Update | **M** | **M** | **M** | **M** | **M** | **M** |
| Lab Investigation | **M** | **M** | **M** | **O** | **O** | **O** |
| M = Mandatory<br>X = Not Applicable<br>O = Optional | | | | | | |

## MEDICAL SURVEILLANCE PROGRAM

Only medically approved employees shall participate in clandestine laboratory activities. Monitoring the health status of employees may detect the early stages of a possible work-related illness. No employee will be allowed to participate in illegal drug laboratory investigation unless medically certified by a physician.

The objectives of this program are to provide:

- Recognition of medical abnormalities at the earliest opportunity in order for corrective action to be implemented.
- Identification of illnesses that may be aggravated by exposure to hazardous substances, physical agents, or other job-related factors.
- Immediate attention from injuries due to overexposure from an emergency incident involving hazardous substances.
- Identification of personnel who may be at risk from the use of personal protective equipment such as respirators and protective clothing.

The medical examination will include as a minimum:

- Occupational/medical history

- Physical examination
- Blood chemistry screening
- Pulmonary function and spirometry testing
- Exercise/stress testing as deemed necessary by a physician
- Baseline chest x-ray (prior to assignment).

Medical examinations and consultations will be performed by or under the supervision of a licensed physician, preferably an occupational physician. Examinations will be provided:

- Prior to assignment
- Every 12 months
- At termination of employment or reassignment outside of the clandestine laboratory response group
- Post-episodic or emergency medical care
- At more frequent times, if the physician deems it necessary.

At the completion of the examination, the physician will provide the employer a confidential written opinion. The employer will provide this opinion to the employee.

## PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment selection will be based on the chemicals found at the scene, applicable route(s) of entry into the body, concentration(s) of contaminants in the air, and other available information. Decisions regarding selection of personal protective equipment will be made by the Site Safety Officer or criminalist. Until the arrival of a criminalist at the scene, the Site Safety Officer has responsibility to determine when it is appropriate to upgrade or downgrade required personal protective equipment. This determination will be based on work area conditions, airborne concentrations of contaminants, or other environmental factors.

A minimum of an air purifying respirator (APR) is required for initial entry into a clandestine drug lab. A self-contained breathing apparatus (SCBA) is preferred due to the lack of information about lab conditions. Mobility and vision of entry personnel are important considerations because of potential hazards posed by armed residents of the lab.

SCBAs are respirators that provide uncontaminated air to the wearer. The primary limitations are weight (approximately 20 pounds), bulkiness, finite air source, and training needed to maintain and use. Only SCBAs providing at least 30 minutes of breathing air, operated in the positive pressure mode, will be used to enter unknown atmospheres and atmospheres containing known hazardous contaminants that require use of a SCBA. The use of SCBA requires a minimum of four people wearing SCBAs—two inside and two outside for rescue.

Air Purifying Respirators (APR) are masks that use either a canister or dual cartridges to remove contaminants from the atmosphere. These respirators do not protect against immanent danger to life or health (IDLH), oxygen deficiency, or other atmospheres with contaminants in unknown concentrations. The contaminants removed are limited by the type, efficiency, and capacity of the cartridge or canister used.

The following U.S. Environmental Protection Agency (USEPA) guideline criteria will be used to select personal protective equipment:

Level A – The highest level of respiratory (SCBA), skin, and eye protection. This level of protection will not be used by Department of Justice (DOJ) employees. Lab sites requiring this level of protection will be referred to individuals with additional specialized training and equipment.

Level B – The highest level of respiratory protection (SCBA), but a lesser level of skin protection.

Level C – Use of APRs and chemical protective clothing, when concentration(s) and type(s) of airborne substance(s) are known and conditions allow for a lesser degree of protection.

Level D – Minimum protection required due to no known hazard.

## SAFETY EQUIPMENT

Level A Equipment

- Positive pressure, full face-piece SCBA, National Institute for Occupational Safety and Health (NIOSH) approved
- Totally encapsulating chemical-protective suit
- Nomex (optional)
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel toe and shank
- Nomex (required for initial entry; for other situation, Site Safety Officer will detain).

Level B Equipment

Requires a minimum of four people wearing SCBAs—two inside, two standing by for rescue.

- Positive pressure, full face-piece (SCBA), NIOSH approved.
- Hooded chemical-resistant clothing (i.e., Saranex).
- Gloves, outer, chemical-resistant (nitrile).
- Gloves, inner, chemical-resistant.
- Boots, outer, chemical-resistant, steel toe and shank.
- Boot-covers, outer, chemical-resistant, steel toe and shank.
- Nomex (optional).

Level C Equipment

- Full face-piece air purifying respirator with canister, NIOSH approved.

- Hooded chemical-resistant clothing (i.e. saranex).
- Gloves, outer, chemical-resistant (nitrile).
- Gloves, inner, chemical-resistant surgical type vinyl (nitrile).
- Boots, outer, chemical-resistant, steel toe and shank.
- Boot-covers, outer, chemical-resistant (disposable).

Level D Equipment

- Gloves (optional)
- Safety glasses or goggles.

Illegal drug lab investigators handling any liquids or solids with possibility of getting into the eyes will wear appropriate eye protection.

The personal protective equipment level will be determined by the Site Safety Officer. All illegal drug lab investigators will comply with the decision of the Site Safety Officer. Illegal drug lab investigators may elect, as a personal preference, to upgrade their level of protection but may never reduce the protection below the level set by the Site Safety Officer. No person will be allowed into a lab site unless wearing personal protective equipment to the minimum level determined by the Site Safety Officer.

## RESPIRATORY PROTECTION PROGRAM

When working in an environment containing harmful dusts, fumes, sprays, mist, fogs, smokes, vapors or gases, the primary method of protection for employees will be engineering control. This is done by ventilating, covering, or substituting less toxic materials. If necessary, administrative controls, such as limiting exposure by limiting time on a job, offer another alternative. If neither engineering nor administrative controls are possible, appropriate respirators will be used.

## RESPONSIBILITIES

## EMPLOYER

- The employer shall provide approved respirators and replacement supplies when such equipment is necessary to control harmful exposures.
- The employer shall provide the procedures for the employee to properly select the correct respirator based on the potential hazard.
- The employer shall be responsible for the establishment, maintenance, and evaluation of the respiratory protection program.
- The employer shall educate and annually train employees on proper respirator use.

## EMPLOYEES

- The employee shall use the provided respiratory protection in accordance with the instruction and training received.
- The employee shall properly clean, maintain, and store the respirator.
- The employee shall report any malfunction of the respirator to his/her supervisor and a Mission Support Branch Industrial Hygienist.

## PROGRAM ADMINISTRATION

Employer

The employer will:

- Provide initial and annual fit testing and associated record keeping.
- Provide initial and annual respirator training and associated record keeping.
- Provide annual medical monitoring and records of physician's certification to wear respiratory protection.
- Implement and retain audit records and program evaluation reports including employee complaints, problems, and suggestions.
- Revise and update the Respiratory Protection Program as needed.

Laboratory Safety Officer

The Laboratory Safety Officer is responsible for:

- Conducting monthly SCBA inspection including recommendations to management to obtain repairs and bi-annual flow testing.
- Ensuring compressed air cylinders are kept filled, and obtaining breathing air certification.
- Maintaining SCBA and cylinder inspection records and certifications.

Site Safety Officer

The Site Safety Officer is responsible for:

- Evaluating the type of clandestine lab and the initial respiratory protection level.
- Conducting appropriate air monitoring to determine the required respiratory protection or determining when the required respiratory protection level can be downgraded.
- Recording air monitoring values and levels of respiratory protection on HARP forms.

## CLASSIFICATION, DESCRIPTION AND LIMITATIONS OF RESPIRATORS

## APPROVED RESPIRATORS

Only NIOSH-approved respirators shall be used. Surgical masks or unapproved dust filters shall not be substituted for approved respirators.

## AIR PURIFYING RESPIRATORS

APRs are masks that use either a canister or dual cartridges to remove contaminants from the atmosphere. These respirators do not protect against IDLH, oxygen deficiency, or other atmospheres where contaminants are in unknown concentrations. The contaminants removed are limited by the type, efficiency, and capacity of the cartridge or canister used. Cartridges should be selected based on chemical hazards commonly found in illegal drug laboratories and for chemicals suspected or known to be present in the specific laboratory being investigated.

## ATMOSPHERE-SUPPLYING RESPIRATORS

SCBAs are respirators that provide uncontaminated air to the wearer. The primary limitations are weight (approximately 20 pounds), bulkiness, finite air source, and training needed to maintain and use. Only SCBAs providing at least 30 minutes of breathing air, operated in the positive pressure mode, will be used to enter unknown atmospheres and atmospheres containing known hazardous contaminants that requires the use of an SCBA.

## SELECTION OF RESPIRATORS

## GENERAL CONSIDERATIONS

The selection of a respirator for any given situation shall require consideration of the following factors:

- The nature of the hazard
- The characteristics of the hazardous operation or process.
- The location of the hazardous area with respect to a safe area having respirable air
- The period of time for which respiratory protection may be provided
- The activity of the workers in the hazardous area
- The physical characteristics, functional capabilities, and limitations of various types of respirators
- The respirator protection factor and respirator fit.

## SELECTION CRITERIA AT CLANDESTINE LABORATORIES

## ASSESSMENT

- For labs inside buildings or other spaces that do not have good ventilation and ANY lab where cooking has been in process when the lab is entered, SCBA shall be used until the atmospheric content can be determined safe.

- For non-cooking labs with good ventilation or boxed labs, a full-face respirator with standard cartridges will be used as a precaution until it can be determined that none of the containers is open and leaking. Following the evaluation, the cartridges will be disposed of based on the established change-out schedule.
- Air monitoring instruments (Lower Explosive Limit = 0%, Oxygen >19.5% or less than 23.5%, Phosphine <0.3 ppm) will be used to determine whether respiratory protection continues to be necessary. Colorimetric tubes may also be used for other contaminants such as hydrogen chloride (<5 ppm).

## PROCESSING

- Removal of closed chemical containers that are not leaking or do not have leakage on the outside will not require the use of respiratory protection. However, an APR should be worn as a precaution.
- Removal of containers that cannot be closed or have leakage on the outside will required the use of SCBA if the material is liquid. If air monitoring can be conducted to determine that there is no respiratory hazard, then a full-face respirator should be used as a precaution. If the material is solid, then a full-face respirator with a standard cartridge should be used. Any person removing any container used for the cooking of a hydriodic acid/red phosphorus/ephedrine mixture should wear a phosphine monitor.

## SAMPLING

- Household product containers: when sampling containers of household product materials or containers containing 5 gallons or less with small openings (i.e., screw top caps) out-of-doors in a well ventilated area, a full face respirator with standard cartridge should be used. The cartridge will be changed after use at each site. Containers must be allowed to depressurize before sampling by slightly opening the lid.
- SCBA is required when sampling containers, used in a recent cooking lab, of greater than 5-gallon size or with large openings (i.e., open buckets), or when working with small containers or items in a poorly ventilated area. If air monitoring does not indicate a hazard, a downgrade to an APR is allowed.

## PROCESSING FOR FINGERPRINTS

- Processing closed containers in a well-ventilated area does not require the use of respiratory protection. Use of a NIOSH-approved dust mask or half-face respirator with a P-100 filter is recommended to avoid inhalation of fingerprint powder.
- Processing open containers used in a recent cooking lab or containing solvents or wastes generally is not done. If an urgent need arises, the area will be ventilated, a PH3 monitor will be worn, it will be determined that no HF or similarly dangerous chemical is present, and at least a half-face respirator will be worn. If the latent print analyst does not believe that precautions are adequate, work can be refused.

## TABLE V-2

## CLANDESTINE DRUG LABORATORY RESPIRATORY PROTECTION AND CARTRIDGE CHANGE-OUT TABLE

| Clandestine Drug Laboratory Respiratory Protection and Cartridge Change-out Table | | |
|---|---|---|
| **ACTIVITY** | **RESPIRATORY PROTECTION** | **CARTRIDGE CHANGE-OUT FREQUENCY** |
| Assessment walk-through in an operating lab or unknown atmosphere | Self-Contained Breathing Apparatus (SCBA) | Not Applicable |
| Assessment walk-through in a non-operating lab | Air Purifying Respirator (APR) should be worn until it can be determined that no containers are open or leaking | Dispose of cartridge after use at that site |
| Processing a cooking lab that has been shut down; moving open or leaking containers | SCBA required unless air monitoring indicates that contaminants are within limits; then an APR should be worn | If downgrade to APR is permitted, dispose of cartridge after use at that site. |
| Processing a boxed lab; moving unopened or closed containers without external contamination | APR should be worn | Dispose of cartridge after use |
| Sampling or opening unknown containers; sampling or opening containers used in a recent cooking lab, or open buckets or liquid or waste larger than 5 gallons in size in a poorly ventilated area | SCBA required; if air monitoring indicates that contaminants are within limits, an APR should be required | If downgrade to APR is permitted, dispose of cartridge after use at that site |
| Sampling or opening household containers less than 5 gallons in size in a well-ventilated area | APR required | Dispose of cartridge after use at that site |

## USE OF RESPIRATORS

Training

The Employee's Supervisor and the respirator wearer shall be given adequate training by a qualified person(s) to ensure proper use of respirators. Written records shall be maintained by the Program Administrator.

This training shall include the following elements:

- Basic respiratory protection practices
- Nature and extent of respiratory hazards to which persons under the Supervisor may be exposed
- Principles and criteria of selecting respirators
- Training of respirator wearers
- Issuance of respirators
- Inspection of respirators
- Use of respirators, including monitoring of use
- Maintenance and storage of respirators
- Regulations concerning respirator use.

Training of Respirator Wearers: To ensure the proper and safe use of a respirator, each respirator wearer shall receive annual training. After the training, each user must demonstrate knowledge of the following elements:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- Limitations and capabilities of the respirator
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions
- How to inspect, put on and remove, use, and check the seals of the respirator
- Procedures for maintenance and storage of the respirator
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

## RETRAINING

Each respirator user shall be retrained annually on the training elements. Training competencies have to be demonstrated and documented.

## RESPIRATOR FIT TESTS

A Quantitative Fit Test using a negative pressure respirator shall be performed initially and annually thereafter to determine the ability of each individual respirator wearer to obtain a

satisfactory fit with an APR. A satisfactory fit is defined as a fit factor averaging 500 or better for a full-face APR; a satisfactory fit factor for a half-face APR is 100.

Respirator fit test of SCBA will not be required in the positive pressure mode. However, the individual must wear the same size and brand of APR mask to which he/she has been quantitatively fit tested.

A person shall be allowed to use only the specified make and model APR and SCBA for which the person has obtained a satisfactory quantitative fit. Under no circumstances shall a person be allowed to use any respirator if the results of the quantitative fit test indicate that the person is unable to obtain a satisfactory fit.

A Quantitative Fit Test shall be carried out for each wearer of a negative pressure respirator prior to initial respirator use and at least annually. A current fit test is required for use of respiratory protection in the field or the laboratory.

## RESPIRATOR FIT TEST RECORDS

Initial and Annual Fit Test records will be kept by the Program Manager. The record will include:

- Employee's identification and work location
- Type of respirator fitted to employee
- Date and location of fit test
- Type of fit test method, scores of individual tests, and average fit factor
- Identification and signature of person performing the fit test.

## RESPIRATOR INSPECTION PRIOR TO USE

Each person issued a respirator for routine, non-routine, emergency, or rescue shall inspect the respirator prior to its use to ensure that it is in good operational condition. Proper function will be evaluated using the manufacturer's inspection procedures.

Air purifying respirator inspection shall include face piece, face shield, straps, buckles, valves, cartridges/canisters, and sealing gaskets.

SCBA inspection shall include facepiece, face shield, straps, buckles, valves, breathing tubes, fittings, compressed air cylinder, air hoses, regulator, and low pressure warning device.

## LEAVING A HAZARDOUS AREA

A respirator wearer shall be permitted to leave the hazardous area for any respirator-related cause. Reasons which require a respirator wearer to leave a hazardous area include, but are not limited to, the following:

- Failure of the respirator to provide adequate protection
- Malfunction of the respirator
- Detection of leakage of an air contaminant into the respirator

- Increase in resistance of the respirator to breathing
- Severe discomfort in wearing the respirator
- Illness of the respirator wearer.

## MAINTENANCE OF RESPIRATORS

## SCBA MAINTENANCE AND INSPECTION

All SCBAs must be inspected monthly by the Laboratory Safety Officer. SCBA manufactures recommend that SCBA regulators be flow tested every two years by a certified technician. The Safety Officer will keep records of flow tests and repairs.

SCBA Cylinders:

- Must be kept at least 90% full
- Must be filled with Grade D breathing air, which is specified as:
    - 19.5-23.5% oxygen
    - <1000 ppm $CO_2$
    - <10 ppm CO
    - < 5 milligrams per cubic meter ($mg/m^3$) oil mist
    - Moisture content< dew point of 50 $^oF$ @ 1 atmosphere.

Grade D breathing air certification must be provided when filling tanks. A copy of the certification must be obtained for documentation.

Composite cylinders shall be hydrostatically tested every three years; steel tanks must be hydrostatically tested every five years. Composite SCBA cylinders shall not be used for more than 15 years following the date of manufacture.

Any SCBA cylinder that has come in direct contact with strong acids or bases will be immediately decontaminated and removed from service. The cylinder shall be inspected by a manufacturer's representative to determine the integrity of the composite coating and future use. Documentation of the inspection and recommendation will be kept with the SCBA records.

## CLEANING AND SANITIZING

Each respirator should be cleaned and sanitized after each use. Use warm water (110 $^oF$ maximum) and mild soap to clean the respirator. Rinse with clean, warm water and allow to air dry. Sanitizing is required if the respirator will be shared. Sanitizing is accomplished by immersing the mask for at least two minutes in one of the following solutions:

- 50 ppm bleach solution (1 milliliter [ml] household bleach in 1 liter of water)
- 50 ppm iodine solution (1 ml tincture of iodine to 1 liter or water)
- A commercially prepared disinfectant recommended by the manufacturer.

Then rinse all components in fresh warm water (110 $^oF$ maximum) and allow to air dry.

## REPAIR AND REPLACEMENT

Replacement of parts or repairs shall be done only by persons trained in proper respirator assembly and correction of possible malfunctions or defects.

Replacement parts shall be only those designed for the specific respirator being repaired. All records of SCBA repair will be provided to and maintained by the Safety Officer.

## STORAGE

Respirators shall be stored in a manner that will protect them against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. SCBAs, APRs, and cartridges will not be operated or stored in environments below 0 $^{o}$F or above 120 $^{o}$F. Respirators shall be stored to prevent distortion of the elastomeric parts.

## SPECIAL PROBLEMS

## CORRECTIVE VISION

Employees who wear corrective lenses may do either of the following:

- Use a spectacle insert kit for the respirator. The employer will provide the kit and the prescription lenses to the employee initially and on an as-needed basis.
- Use contact lenses.

No modification of the face piece is allowed.

## IMMEDIATELY DANGEROUS TO LIFE OR HEALTH ATMOSPHERES

When an atmosphere has been characterized as IDLH due to oxygen deficiency or toxicity, an SCBA must be used. Atmospheres containing flammable vapors may not be entered until ventilation has reduced the flammability levels to zero as measured on a combustible gas meter. Hazardous atmospheres that cannot be characterized shall be considered IDLH.

When entry into IDLH atmospheres is required, at least one standby person shall have positive pressure SCBA and appropriate retrieval equipment for removing the employee(s) who have entered the IDLH atmosphere in case of emergency. Communications (visual, voice, or other suitable means) shall be maintained between the standby person and the respirator wearers. The employee(s) outside the IDLH atmosphere shall be trained and equipped to provide effective emergency rescue.

## CONFINED SPACES

All confined spaces shall be considered IDLH unless proven otherwise. Before a person is allowed to enter a permit-required confined space, all requirements of confined space entry must be carried out, including preparation of a permit, continuous air monitoring, stationing of attendants, provision of retrieval equipment, and communications equipment.

## MEDICAL EVALUATION

No employee shall be assigned work requiring the use of a respirator, including standby-mode, or may volunteer to wear a respirator where not required unless an occupational health physician has determined that the person is physically able to perform the work while using a respirator.

The physician's determination that an employee is certified to wear/use a respirator shall be based on medical tests and findings, including:

- Medical history
- Pulmonary function tests
- Treadmill (when required by the physician)
- Chest X-ray (when required by the physician).

The physician's determination shall be made before the time of assignment to respirator use and updated annually. For each employee, the physician's determination shall be documented on the Physician's Certification of Employee Respirator Use letter or similar document, signed by the examining physician, and provided to the Program Administrator .

If the physician finds that an employee has a medical condition that would prevent use of a negative pressure APR, the physician must evaluate whether a powered air-purifying respirator (PAPR) will mitigate the medical condition. If the physician determines that the PAPR is a satisfactory substitute, the PAPR will be provided to the employee by the employer if appropriate cartridges are available.

When the employee ceases to work in clandestine lab investigations, a final evaluation will be conducted and future annual evaluations will cease.

## PROGRAM EVALUATION

The Program Administrator will annually assess implementation of the Respiratory Protection Program. Assessment will include:

- Respirator fit
- Appropriate selection based on hazard
- Proper use
- Proper maintenance.

Periodic assessment of actual exposure by quantitative personal air monitoring will be conducted to verify respirator selection criteria.

## DEFINITIONS SPECIFIC TO RESPIRATORY PROTECTION

Air hose: a tube through which air flows to the facepiece from the regulator or pump.

Approved: Respirators that have been tested and listed as satisfactory, meeting standards set by NIOSH.

Canister: A large sealed container holding a filter, absorbent material, or both, which removes specific contaminants from the air drawn through it.

Cartridge: A small canister with the same purpose.

Confined Space: A space with all of the following features:

- Large enough and so arranged that an employee can physically enter and perform assigned work
- Limited or restricted means of entry or exit
- Not designed for human occupancy.

Contaminant: A harmful, irritating, or nuisance material that is foreign to the natural atmosphere.

End-of Service-Life Indicator (ESLI): A device or label that warns the respirator user of the approach of the end of adequate respiratory protection—i.e., that the sorbent is approaching saturation or is no longer effective.

Escape-Only Respirator: A respirator intended to be used only for emergency exit.

Facepiece: The part of the respirator that covers the wearer's eye, nose, and mouth (full facepiece). It is designed to make a gas-tight or particle-tight fit with the face and including the headbands, exhalation valve, and connectors for an air purifying device (two cartridges or single canister) or air supplying source (self-contained breathing apparatus).

Filter: A device used in cartridges or canisters to remove solid or liquid aerosols from the air.

Immediately Dangerous to Life and Health (IDLH): An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Inhalation Valve: A device that allows respirable air to enter a respirator and prevents exhaled air from leaving the respirator through the valve.

Maximum Use Limit: The maximum concentration of a contaminant for which an air-purifying filter, cartridge, or canister is approved for use.

N100: Particulate filter (99.97% filter efficiency level) effective against particulate aerosols free of oil.

Negative Pressure Respirator: A respirator in which the air pressure inside the mask is positive during exhalation and negative during inhalation in relation to the outside air pressure.

NIOSH: National Institute for Occupational Safety and Health.

P100: Particulate filter (99.97% filter efficiency level) effective against particulate and oily aerosols for multiple shifts.

Powered Air-Purifying Respirator (PAPR): An air purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Permissible Exposure Limit (PEL): The legally established time-weighted (TWA) concentrations or ceiling concentration of a contaminant that shall not be exceeded.

Permit Required Confined Space: A space with any one of the following features:

- Has or may have the potential to develop a hazardous atmosphere
- Contains materials that could engulf entrants
- Has shape that may entrap entrants
- Contains any serious safety or health hazards.

Positive Pressure Respirator: A respirator in which the air pressure inside the mask is always positive relative to the outside air pressure during both inhalation and exhalation.

Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer. These values are assigned by NIOSH.

Respirator: A device designed to protect the wearer from inhalation of harmful atmospheres.

Sanitize: To destroy organisms that cause disease or infection.

## DECISION LOGIC FOR RESPIRATOR SELECTION

Justification for respirator selection is provided for the following situations:

## CLAN LAB ASSESSMENT

- Labs inside buildings or other spaces that do not have good ventilation and ANY lab where cooking has been in process when the lab is entered: SCBA shall be used until the atmospheric content can be determined safe.

Due to the danger of exposure to phosphine gas, as well as the lack of ability to measure all toxic substances in real-time situations, SCBA will provide safe breathing air to employees involved in assessing clan labs where the likelihood of exposure to chemicals is high. Full face APRs cannot be justified unless all potential air contaminants can be measured with colorimetric tubes and the levels are found below 50 times the PEL.

- Non-cooking labs with good ventilation, or boxed labs: A full-face respirator with standard cartridges will be used as a precaution until it can be determined that none of the containers are open and leaking. Following the evaluation, the cartridges will be disposed of based on established change-out schedules.

With good ventilation or closed containers, the employee exposure should be low. Even with good ventilation, special precautions should be taken around open containers, especially ones with large surface area. The use of colorimetric tubes should be used in these circumstances to determine that the levels of contaminant exposure are below 50 times the PEL.

- Air monitoring instruments (CGI = 0%, Oxygen >19.5% or less than 23.5%, Phosphine <0.3 ppm) will be used to determine whether respiratory protection continues to be necessary. Colorimetric tubes may also be used for other contaminants, such as hydrogen chloride (<5 ppm).

Clan Lab Processing

- Removal of closed chemical containers that are not leaking or do not have leakage on the outside will not require the use of respiratory protection.

No exposure would be expected if the container is closed, not leaking and not contaminated on the outside. This presumes an atmosphere that is free of contaminants and with adequate oxygen. If this were to occur in a confined space situation with high contaminant levels, respiratory protection would still have to be worn during disassembly even if the containers were closed. Even when not in a confined space, a respirator should be worn as a precaution against accidental release.

- Removal of containers that cannot be closed or have leakage on the outside will require the use of SCBA if the material is liquid. If air monitoring can be conducted to determine that there is no respiratory hazard, then a full-face respirator should be used as a precaution. If the material is solid, then a full-face respirator with a standard cartridge should be used. Any person removing any container used for the cooking hydriodic acid/red phosphorus/ephedrine mixture should wear a phosphine monitor.

Due to the unknown volatile emission concentration of open or leaking liquid containers, SCBA is necessary. If air monitoring can be done with a phosphine monitor or colorimetric tubes to determine that the emissions are within PELs, then a full-face respirator should be used as a precaution. If the material is solid or powder, the standard cartridge is adequate to provide protection to employees.

A phosphine monitor will alert personnel to the presence of phosphine and to the need to move the container to a location that will prevent others from being exposed.

Sampling

- Household product containers: when sampling containers of household product materials or containers containing 5 gallons or less with small openings (i.e. screw top caps) out-of-doors in a well ventilated area a full face respirator with standard cartridge should be used. The cartridge will be changed after use at each site. Containers must be allowed to depressurize before sampling by slightly opening the lid.

Air sampling data compiled by California Department of Justice Bureau of Narcotics Enforcement indicates that the organic substance exposure levels when opening caps from small containers will not expose employees to excessive levels of contaminants when done in an open area. Therefore, a full-face APR is generally adequate when sampling.

- Sampling containers used in a recent cooking lab, or greater than 5 gallons in size, or with large openings (i.e. open buckets) or working with small containers or items in a poorly ventilated area require the use of SCBA. If air monitoring does not indicate a hazard, downgrade to an APR is allowed.

Due to the inability to properly quantify the concentration of contaminants in situations where phosphine may be generated or where large surface area exposures may occur, SCBA is required to provide adequate protection to employees. If air monitoring can be done and demonstrate that the work can be performed safely without a SCBA, then downgrade to an APR is allowed.

Processing for Fingerprints

- Processing closed containers in a well-ventilated area does not require the use of respiratory protection. Use of a NIOSH approved dust mask or half-face respirator with a P-100 filter is recommended to avoid inhalation of fingerprint powder.

No exposure to chemicals is anticipated if the container is kept closed and good ventilation is present. Respiratory protection is recommended, not required to reduce inhalation of fingerprint powder. Exposures to fingerprint powder are not anticipated to exceed the PEL of 5 mg/m3 (see NIOSH Health Hazard Evaluation Report 92-0147-2456, Federal Bureau of Investigation, September, 1994).

- Processing open containers used in a recent cooking lab or containing solvents or wastes will generally not be done. If an urgent need arises, then the area will be ventilated, a phosphine monitor will be worn, it will be determined that no HF or similarly dangerous chemical is present and at least a half-face respirator will be worn. If the Latent Print Analyst does not believe that adequate precautions are being made, then work can be refused.

Latent Prints cannot be collected when wearing SCBA. Therefore, when open containers exist, prints should NOT be collected unless adequate precautions can be put into place. If the precautions described or any other that would be prudent under the circumstances are not carried out, and the Latent Print Analyst believes that the work would violate a state or OSHA standard or would create a real and apparent hazard, the Analyst has the opportunity to refuse the work.

## RESPIRATOR CARTRIDGE CHANGE-OUT SCHEDULES

## RULE OF THUMB

If the chemical's boiling point is >70$^{o}$C and the concentration is less than 200 ppm, you can expect a service life of 8 hours at a normal work rate. Service life is inversely proportional to work rate. Reducing concentration by a factor of 10 will increase service life by a factor of five. Humidity above 85% will reduce service life by 50%.

Examples: toluene, trichloroethylene. However, even though ethyl alcohol fits the rule of thumb, experimental data indicates that the effectiveness of activated carbon in absorbing ethyl alcohol is not very efficient and maximum wear times are considerably less than that predicted by Rule of Thumb.

## EXPERIMENTAL EVIDENCE

Organic solvents

The following is data collected by California Department of Justice Bureau of Narcotics Enforcement when opening chemical containers with screw top lids 2.25 inches in diameter. Fifty milliliters of each substance was used. After 10 seconds of swirling, the cap was opened and samples were collected at 1 foot directly above the container. Real-time analysis was obtained with a Foxboro MIRAN 1BX. The 70 and 100oF columns indicate actual chemical concentrations recorded at those temperatures. All values are in APPM. Except for chloroform, respiratory protection would not be required when sampling these substances. Time in minutes refers to cartridge change-out time if a respirator is elected to be worn.

**TABLE V-3**
**RESPIRATOR CHANGE OUT SCHEDULE**

| Chemical | PEL PPM | 70°F PPM | Time-min | 100°F PPM | Time-min |
|---|---|---|---|---|---|
| Acetone | 750 | 40 | 43 | 184 | 32 |
| Chloroform | 2 | 32 | 445 | 114 | 218 |
| Ethyl Alcohol | 1000 | 62 | 47 | 44(114*) | 35 |
| Ethyl Ether | 100 | 26 | 285 | 34(58*) | 117 |
| Methyl Alcohol | 200 | 150 | 0 | 146(279*) | 0 |
| Toluene | 50 | 9 | >8 hr | 48 | >8hr |

* = level measured when lid opened first time after heating without swirling.

Hydrogen Chloride

Using Dräger colorimetric tubes, exposure to hydrogen chloride was measured at a height of 1 foot above the lip:

**TABLE V-4**
**HYDROGEN CHLORIDE TESTING**

| Conditions | Concentration measured @70°F | Concentration measured @95°F |
|---|---|---|
| Laboratory grade HCl: 37-39%<br>1 inch opening | 10 ppm | Not tested |
| Consumer grade drain cleaner<br>HCl 10%, 90% inert<br>Screw-top container, 2.25 inch dia. | 0 ppm | 0 ppm |

This data shows that if any laboratory grade HCl is suspected which must be sampled, then a respirator must be used. Based on MSA data for an exposure to 10 ppm, the change-out schedule would be 1440 minutes. Therefore, DLE will require change-out after use at each site. Manufacturer's Experimental Data Change-out schedules for SCOTT respirator cartridges

## TABLE V-5

## ESTIMATED CARTRIDGE BREAKTHROUGH TIME FOR THE SCOTT 642-MPC MULTI-PURPOSE TWIN CARTRIDGE MEDIUM WORK RATE, 22 $^{O}$C AND LESS THAN 65 % RH

| CHEMICAL | ESTIMATED CARTRIDGE SERVICE LIFE IN HOURS AT | | | | | |
|---|---|---|---|---|---|---|
| | CAS NO. | 10 ppm | 50 ppm | 100 ppm | 500 ppm | 1000 ppm |
| Acetic anhydride | 108-24-7 | 98.4 | 33.5 | 21.0 | 7.2 | 4.5 |
| Acetone | 67-64-1 | 27.9 | 9.5 | 6.0 | 2.0 | 1.3 |
| Acrylonitrile | 107-13-1 | 36.9 | 12.6 | 7.9 | 2.7 | 1.7 |
| Allyl acetate | 591-87-7 | 60.3 | 20.5 | 12.9 | 4.4 | 2.8 |
| Allyl alcohol | 107-18-6 | 52.4 | 17.8 | 11.2 | 3.8 | 2.4 |
| Allyl chloride | 107-05-1 | 24.6 | 8.4 | 5.3 | 1.8 | 1.1 |
| Benzene | 71-43-2 | 57.9 | 19.7 | 12.4 | 4.2 | 2.6 |
| Bromobenzene | 108-86-1 | 106.9 | 36.4 | 22.9 | 7.8 | 4.9 |
| Butanol | 71-36-3 | 91.3 | 31.0 | 19.5 | 6.6 | 4.2 |
| Butanol, 2- | 78-92-2 | 76.2 | 25.9 | 16.3 | 5.5 | 3.5 |
| Butanone, 2- | 78-93-3 | 61.8 | 21.0 | 13.2 | 4.5 | 2.8 |
| Butyl acetate | 123-86-4 | 61.1 | 20.8 | 13.1 | 4.4 | 2.8 |
| Butyl acetate, sec- | 105-46-4 | 65.9 | 22.4 | 14.1 | 4.8 | 3.0 |
| Butylamine | 109-73-9 | 82.8 | 28.2 | 17.7 | 6.0 | 3.8 |
| Carbon tetrachloride | 56-32-5 | 61.1 | 20.8 | 13.1 | 4.4 | 2.8 |
| Chlorobenzene | 108-90-7 | 84.9 | 28.9 | 18.2 | 6.2 | 3.9 |
| Chlorobutane, 1- | 109-69-3 | 57.1 | 19.4 | 12.2 | 4.2 | 2.6 |
| Chlorocyclopentane | 930-28-9 | 61.9 | 21.1 | 13.2 | 4.5 | 2.8 |
| Chloroform | 67-66-3 | 26.2 | 8.9 | 5.6 | 1.9 | 1.2 |
| Chloroheptane, 1- | 629-06-1 | 65.1 | 22.1 | 13.9 | 4.7 | 3.0 |
| Chlorohexane, 1- | 544-10-5 | 61.1 | 20.8 | 13.1 | 4.4 | 2.8 |
| Chloromethyl heptane, 3- | 123-04-6 | 50.0 | 17.0 | 10.7 | 3.6 | 2.3 |
| Chloropentane, 1- | 543-59-9 | 59.5 | 20.2 | 12.7 | 4.3 | 2.7 |
| Chloropropane, 1- | 540-54-5 | 19.8 | 6.7 | 4.2 | 1.4 | 0.9 |
| Chloropropane, 2- | 75-29-6 | 20.6 | 7.0 | 4.4 | 1.5 | 0.9 |
| Chlorotoluene, o- | 95-49-8 | 80.9 | 27.5 | 17.3 | 5.9 | 3.7 |
| Chloro-2-methylbutane, 2- | 594-36-5 | 46.8 | 15.9 | 10.0 | 3.4 | 2.1 |
| Chloro-2-methylpropane, 2- | 507-20-0 | 29.4 | 10.0 | 6.3 | 2.1 | 1.3 |
| Cumene | 98-82-8 | 64.3 | 21.9 | 13.7 | 4.7 | 2.9 |
| Cycloheptatriene, 1,3,5- | 544-25-2 | 91.1 | 31.0 | 19.5 | 6.6 | 4.2 |
| Cyclohexane | 110-82-7 | 52.0 | 17.7 | 11.1 | 3.8 | 2.4 |
| Cyclohexanone | 108-94-1 | 94.9 | 32.3 | 20.3 | 6.9 | 4.3 |
| Cyclohexene | 110-83-8 | 64.8 | 22.0 | 13.8 | 4.7 | 3.0 |
| Cyclohexylamine | 108-91-8 | 84.3 | 28.7 | 18.0 | 6.1 | 3.9 |
| Cyclooctane | 292-64-8 | 73.0 | 24.8 | 15.6 | 5.3 | 3.3 |

## TABLE V-5 (Continued)

## ESTIMATED CARTRIDGE BREAKTHROUGH TIME FOR THE SCOTT 642-MPC MULTI-PURPOSE TWIN CARTRIDGE MEDIUM WORK RATE, 22 $^{O}$C AND LESS THAN 65 % RH

| CHEMICAL | ESTIMATED CARTRIDGE SERVICE LIFE IN HOURS AT | | | | | |
|---|---|---|---|---|---|---|
| | CAS NO. | 10 ppm | 50 ppm | 100 ppm | 500 ppm | 1000 ppm |
| Cyclopentanone | 120-92-3 | 106.2 | 36.1 | 22.7 | 7.7 | 4.9 |
| Cymene, p- | 99-87-6 | 60.3 | 20.5 | 12.9 | 4.4 | 2.8 |
| Decane | 124-18-5 | 53.5 | 18.2 | 11.4 | 3.9 | 2.4 |
| Dibromoethane, 1,2- | 106-93-4 | 106.2 | 36.1 | 22.7 | 7.7 | 4.9 |
| Dibromomethane | 74-95-3 | 61.8 | 21.0 | 13.2 | 4.5 | 2.8 |
| Dibutylamine | 111-92-2 | 57.2 | 19.5 | 12.2 | 4.2 | 2.6 |
| Dichlorobenzene, 1,2- | 95-50-1 | 86.5 | 29.4 | 18.5 | 6.3 | 4.0 |
| Dichlorobutane, 1,4- | 110-56-5 | 85.7 | 29.2 | 18.3 | 6.2 | 3.9 |
| Dichloroethane, 1,1- | 75-35-4 | 18.3 | 6.2 | 3.9 | 1.3 | 0.8 |
| Dichloroethane, 1,2- | 107-06-2 | 42.9 | 14.6 | 9.2 | 3.1 | 2.0 |
| Dichloroethylene, 1,2-cis- | 156-59-2 | 23.8 | 8.1 | 5.1 | 1.7 | 1.1 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | 26.2 | 8.9 | 5.6 | 1.9 | 1.2 |
| Dichloromethane | 75-09-2 | 7.9 | 2.7 | 1.7 | 0.6 | 0.4 |
| Dichloropropane, 1,2- | 78-87-5 | 51.6 | 17.5 | 11.0 | 3.8 | 2.4 |
| Dichloropropene, 1,3- | 542-75-6 | 68.2 | 23.2 | 14.6 | 5.0 | 3.1 |
| Diethylamine | 109-89-7 | 66.3 | 22.5 | 14.2 | 4.8 | 3.0 |
| Diisobutyl ketone | 108-83-8 | 53.5 | 18.2 | 11.4 | 3.9 | 2.4 |
| Diisopropylamine | 108-18-9 | 58.0 | 19.7 | 12.4 | 4.2 | 2.7 |
| Dimethylamine | 124-40-3 | 12.8 | 4.4 | 2.7 | 0.9 | 0.6 |
| Dimethylbutane, 2,3- | 79-29-8 | 54.2 | 18.4 | 11.6 | 3.9 | 2.5 |
| Dipropylamine | 142-84-7 | 70.0 | 23.8 | 15.0 | 5.1 | 3.2 |
| Epichlorohydrin | 106-89-8 | 68.2 | 23.2 | 14.6 | 5.0 | 3.1 |
| Ethanol | 64-17-5 | 22.2 | 7.6 | 4.8 | 1.6 | 1.0 |
| Ethoxyethanol, 2- | 110-80-5 | 61.1 | 20.8 | 13.1 | 4.4 | 2.8 |
| Ethoxyethlyacetate, 2- | 111-15-9 | 63.5 | 21.6 | 13.6 | 4.6 | 2.9 |
| Ethyl acetate | 141-78-6 | 53.2 | 18.1 | 11.4 | 3.9 | 2.4 |
| Ethyl benzene | 100-41-4 | 66.7 | 22.7 | 14.3 | 4.8 | 3.0 |
| Ethyl chloride | 75-00-3 | 4.8 | 1.6 | 1.0 | 0.3 | 0.2 |
| Ethylamine | 75-04-7 | 30.9 | 10.5 | 6.6 | 2.2 | 1.4 |
| Ethylidene-5-norbornene, 2- | 16219-75-3 | 65.5 | 22.3 | 14.0 | 4.8 | 3.0 |
| Ethyl-1-butanol, 2- | 97-95-0 | 61.1 | 20.8 | 13.1 | 4.4 | 2.8 |
| Heptane | 142-82-5 | 58.7 | 20.0 | 12.6 | 4.3 | 2.7 |
| Heptanone, 2- | 110-43-0 | 76.1 | 25.9 | 16.3 | 5.5 | 3.5 |
| Heptanone, 3- | 106-35-4 | 68.5 | 23.3 | 14.7 | 5.0 | 3.1 |
| Hexane | 110-54-3 | 39.2 | 13.3 | 8.4 | 2.8 | 1.8 |
| Hexyl acetate | 142-92-7 | 53.2 | 18.1 | 11.4 | 3.9 | 2.4 |
| Isopentyl acetate | 123-92-2 | 56.3 | 19.2 | 12.0 | 4.1 | 2.6 |
| Isopropanol | 67-63-0 | 42.9 | 14.6 | 9.2 | 3.1 | 2.0 |

## TABLE V-5 (Continued)

## ESTIMATED CARTRIDGE BREAKTHROUGH TIME FOR THE SCOTT 642-MPC MULTI-PURPOSE TWIN CARTRIDGE MEDIUM WORK RATE, 22 $^{O}$C AND LESS THAN 65 % RH

| CHEMICAL | ESTIMATED CARTRIDGE SERVICE LIFE IN HOURS AT | | | | | |
|---|---|---|---|---|---|---|
| | CAS NO. | 10 ppm | 50 ppm | 100 ppm | 500 ppm | 1000 ppm |
| Isopropenyl acetate | 108-22-5 | 64.3 | 21.9 | 13.7 | 4.7 | 2.9 |
| Isopropyl acetate | 108-21-4 | 51.6 | 17.5 | 11.0 | 3.8 | 2.4 |
| Isopropylamine | 75-31-0 | 49.7 | 16.9 | 10.6 | 3.6 | 2.3 |
| Mesityl oxide | 141-79-7 | 91.9 | 31.3 | 19.6 | 6.7 | 4.2 |
| Mesitylene | 108-67-8 | 68.2 | 23.2 | 14.6 | 5.0 | 3.1 |
| Methanol | 67-56-1 | 0.16 | 0.05 | 0.034 | 0.012 | 0.007 |
| Methoxyethanol, 2- | 109-86-4 | 92.1 | 31.3 | 19.7 | 6.7 | 4.2 |
| Methoxyethylacetate, 2- | 110-49-6 | 73.8 | 25.1 | 15.8 | 5.4 | 3.4 |
| Methyl acetate | 79-20-9 | 26.2 | 8.9 | 5.6 | 1.9 | 1.2 |
| Methyl chloride | 74-87-3 | 0.04 | 0.01 | 0.008 | 0.003 | 0.002 |
| Methyl chloroform | 71-55-6 | 31.7 | 10.8 | 6.8 | 2.3 | 1.5 |
| Methyl iodide | 74-88-4 | 9.0 | 3.1 | 1.9 | 0.7 | 0.4 |
| Methylamine | 74-89-5 | 9.0 | 3.1 | 1.9 | 0.7 | 0.4 |
| Methylcyclohexane | 108-87-2 | 52.0 | 17.7 | 11.1 | 3.8 | 2.4 |
| Methylcyclohexanone, 4- | 589-92-4 | 83.6 | 28.4 | 17.9 | 6.1 | 3.8 |
| Methylcyclopentane | 96-37-7 | 46.7 | 15.9 | 10.0 | 3.4 | 2.1 |
| Methyl-3-cyclohexanone | 591-24-2 | 76.1 | 25.9 | 16.3 | 5.5 | 3.5 |
| Methyl-3-butanol, 1- | 123-41-3 | 77.0 | 26.2 | 16.5 | 5.6 | 3.5 |
| Methyl-4-pentanone, 2- | 108-10-1 | 72.3 | 24.6 | 15.5 | 5.3 | 3.3 |
| Methyl-4 pentanol, 2- | 108-11-2 | 59.5 | 20.2 | 12.7 | 4.3 | 2.7 |
| Methyl-5-heptanone, 3- | 541-85-5 | 64.8 | 22.0 | 13.8 | 4.7 | 3.0 |
| Nitropropane, 1- | 108-03-2 | 107.7 | 36.6 | 23.0 | 7.8 | 4.9 |
| Nonane | 111-84-2 | 57.2 | 19.5 | 12.2 | 4.2 | 2.6 |
| Pentachloroethane | 76-01-7 | 73.8 | 25.1 | 15.8 | 5.4 | 3.4 |
| Pentane | 109-66-0 | 45.9 | 15.6 | 9.8 | 3.3 | 2.1 |
| Pentanedione, 2,4- | 123-54-6 | 97.9 | 33.3 | 20.9 | 7.1 | 4.5 |
| Pentanol | 71-41-0 | 80.9 | 27.5 | 17.3 | 5.9 | 3.7 |
| Pentanol, 2- | 6032-29-7 | 69.0 | 23.5 | 14.8 | 5.0 | 3.2 |
| Pentanone, 2- | 107-87-9 | 78.3 | 26.6 | 16.7 | 5.7 | 3.6 |
| Pentanone, 3- | 96-22-0 | 70.8 | 24.1 | 15.1 | 5.1 | 3.2 |
| Pentyl acetate | 628-63-7 | 57.9 | 19.7 | 12.4 | 4.2 | 2.6 |
| Perchloroethylene | 127-18-4 | 84.9 | 28.9 | 18.2 | 6.2 | 3.9 |
| Propanol | 71-23-8 | 55.6 | 18.9 | 11.9 | 4.0 | 2.5 |
| Propyl acetate | 109-60-4 | 62.7 | 21.3 | 13.4 | 4.6 | 2.9 |
| Propylamine | 107-10-8 | 67.8 | 23.1 | 14.5 | 4.9 | 3.1 |
| Pyridine | 110-86-1 | 89.6 | 30.5 | 19.2 | 6.5 | 4.1 |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 82.5 | 28.1 | 17.6 | 6.0 | 3.8 |
| Toluene | 108-88-3 | 74.6 | 25.4 | 15.9 | 5.4 | 3.4 |

## TABLE V-5 (Continued)

## ESTIMATED CARTRIDGE BREAKTHROUGH TIME FOR THE SCOTT 642-MPC MULTI-PURPOSE TWIN CARTRIDGE MEDIUM WORK RATE, 22 $^{O}$C AND LESS THAN 65 % RH

| CHEMICAL | ESTIMATED CARTRIDGE SERVICE LIFE IN HOURS AT | | | | | |
|---|---|---|---|---|---|---|
| | CAS NO. | 10 ppm | 50 ppm | 100 ppm | 500 ppm | 1000 ppm |
| Trichloroethane, 1,1,2- | 79-00-5 | 57.1 | 19.4 | 12.2 | 4.2 | 2.6 |
| Trichloroethylene | 79-01-6 | 43.6 | 14.8 | 9.3 | 3.2 | 2.0 |
| Trichloropropane, 1,2,3- | 96-18-4 | 88.1 | 30.0 | 18.8 | 6.4 | 4.0 |
| Triethylamine | 121-44-8 | 61.0 | 20.8 | 13.0 | 4.4 | 2.8 |
| Trimethlypentane, 2,2,4- | 540-84-1 | 51.2 | 17.4 | 10.9 | 3.7 | 2.3 |
| Trimethylhexane, 2,2,5- | 35-94-9 | 51.2 | 17.4 | 10.9 | 3.7 | 2.3 |
| Vinyl acetate | 108-05-4 | 43.6 | 14.8 | 9.3 | 3.2 | 2.0 |
| Vinyl chloride | 75-01-4 | 3.2 | 1.1 | 0.7 | 0.2 | 0.1 |
| Xylene, m- | 108-38-3 | 78.6 | 26.7 | 16.8 | 5.7 | 3.6 |

Cartridge lives at 1000 ppm represent experimental 1% breakthrough data points obtained in the 1970's adjusted for a medium work rate and the increased carbon volume and capacity of current cartridge technology. These data are applicable for ambient conditions at 22ºC, relative humidities from 0 to 65% and a medium work rate (25 LPM). The other breakthrough times were calculated from Equation 2 taken from Nelson, G. O. and A. N. Correia, "Respirator Cartridge Efficiency Studies: VIII Am. Ind. Hyg. Assoc. J. 37: 514 (1976). These tests and calculations assume no safety factor

For temperatures at 32 oC, multiply breakthrough times by 0.8.

For temperatures at 12 oC, multiply breakthrough times by 1.2.

For relative humidities between 65 and 80 %, multiply breakthrough times by 0.9.
For relative humidities between 80 and 95 %, multiply breakthrough times by 0.8.
These tests were performed under laboratory conditions and not under actual use conditions. Miller-Nelson Research Inc makes no warranties. Miller-Nelson Research Inc makes no warranties concerning protection by these air purifying respirator devices. These cartridge lives are estimates and the user should determine the suitability of the devices under actual field conditions. Compiled by Miller-Nelson Research Inc, 8 Harris Ct., Suite C-6, Monterey, CA 93940

## DECONTAMINATION

Decontamination is a means of removing and/or neutralizing contaminants on personnel and equipment when exiting the hot zone. Since contamination is not always seen, these procedures are utilized to protect the employee to ensure that contamination is kept at the site. Pursuant to both federal and state law, a decontamination plan needs to be developed and put into use prior to the beginning of an investigation at a clandestine laboratory scene. All employees working in the hot zone will be decontaminated. This may be a full decontamination sequence, or a modified version, depending on the resources available at the site and the amount of contamination encountered. Decontamination should take place as soon as personnel are exiting the lab scene. All employees working in the decontamination zone, need to review the decontamination procedures before work at the clan lab site begins so that employees can quickly and safely exit the hot zone.

Decontamination items include:

- Fresh water
- Showers
- Soap and mild detergent;
- Scrub brushes;
- Wading pools;
- Visqueen plastic sheeting;
- Water sprayers for rinsing;
- OSHA approved eye wash
- Paper towels.

An emergency vehicle containing a minimum of the above equipment will be present at all clan lab sites where an employee has to touch any item that contains more than one ounce of liquid, or powder chemicals that could spill onto the employee and cause damage to the skin. A fire truck with a water supply for showers and eye wash will comply with the above.

When responding to a clan lab where the emergency response vehicle is not present, a local source of water may have to be used. Since many clandestine drug labs may be found in remote locations, it will be the responsibility of the Site Safety Officer to ensure that the water is safe for use in decontamination.

Decontamination sequences, whether full or modified, need to be performed in a manner that does not allow the exposed skin of an employee to possibly come in contact with contaminated clothing. Decontamination sequences may include:

- Washing and scrubbing outer garments to remove noticeable contamination or removal and discard of disposable garments, concentrating on
- gloves and boots;
- Rinsing outer garments with clean water;
- Removal of SCBA (Level B);

- Washing and rinsing of the employee's air purifying respirator and self contained breathing apparatus;
- Wipe down air monitoring instrumentation;
- Removal of all duct tape;
- Removal of outer boots and gloves;
- Rolling down and removing suit, without touching outside of garment;
- Removal of APR or face-piece from SCBA;
- Removal of inner gloves without touching outside of gloves;
- Washing hands and face.

Personnel need to be familiar with the decontamination and removal of PPE to avoid inadvertent exposure. Anyone working in the decontamination area will decontaminate themselves once all other personnel who have been working in the hot zone are through. All used decontamination solutions shall be disposed of by the hazardous waste hauler. A decontamination line must be established to allow employees leaving the exclusion zone to move from a greater to a lesser-contaminated area. Employees shall remove the most contaminated items first and the less contaminated items last.

To prevent contamination to a receiving law enforcement officer or personnel, all suspects and persons found at a scene should be decontaminated to the fullest extent possible. Contaminated clothing should be removed, and the suspect placed in a Tyvek suit. All facilities and transporting officers shall be notified of any prisoner who may be contaminated.

## THERMAL STRESS

Weather conditions at clandestine laboratory sites may be hazardous because they cannot be controlled. Depending on environmental conditions, thermal stress (heat or cold stress) may pose a problem. The following information provides guidelines for working in either condition.

## HEAT STRESS

Due to the use of personal protective equipment (PPE), heat stress is a physical hazard that shall be considered throughout the duration of work performed in temperatures of 70F or higher. The use of PPE can impose additional heat load and may cause employees to experience heat stress. Useful methods of preventing heat stress include:

- Employee training;
- Frequent monitoring during use of PPE;
- Replacement of body fluids;
- Avoiding unnecessary over-exertion;
- Establishing a sensible work/rest regimen.

Signs and Symptoms of Heat Stress

Heat Rash can be caused by continuous exposure to hot and/or humid air. This condition is characterized by a localized red skin rash and reduced sweating.

Heat Cramps can be, caused by profuse sweating with inadequate fluid and salt replacement. This condition is characterized by muscle spasms and pain in the extremities and stomach.

Heat Exhaustion is a mild form of shock, caused by substantial physical activity in heat and profuse sweating without adequate fluid and salt replacement. The signs and symptoms include pale, cool, moist skin, heavy sweating, dizziness, nausea and fainting.

Heat Stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occurs. Medical help must be obtained immediately. Signs and symptoms include red, hot, unusually dry skin, lack of or reduced perspiration, nausea, dizziness and confusion, strong, rapid pulse and coma.

Heat Stress Control Measures

One or more of the following control measures can be used to help control heat stress:

Employees must replace body fluids lost from sweating. Adequate liquids to replace lost body fluids must be provided. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement. A work regimen that will provide adequate rest periods for cooling down must be established. Breaks should be taken in a shaded rest area. Cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments, if available. Establish shifts to rotate staff work during potential heat stress conditions. Schedule work to use shade and avoid midday temperatures whenever possible.

Potable Water

An adequate supply of potable water shall be provided at clandestine laboratory sites in portable water containers. Portable containers used to dispense drinking water shall be capable of being tightly closed. Containers used to distribute drinking water shall be clearly marked and not used for any other purpose.

## COLD STRESS

Two factors which strongly influence a cold stress condition are ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. As wind chill increases it will increase the chilling effect to the air.

Signs and Symptoms of Cold Stress

Frost nip or incipient frostbite, characterized by suddenly blanching or whitening of skin.

Superficial frostbite, where the skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient.

Deep frostbite, where tissues are cold, pale, and solid; this is an extremely serious injury.

Cold Stress Control Measures

Prevention of cold stress includes work/rest schedules, with the rest area warm and dry. Selection of clothing, such as wool or thermal synthetics, should be layered to enhance maintenance of dead air space. An outer layer of woven nylon or other wind-breaking materials should also be worn. Head, hands and feet should be covered with warm, layered garments. Proper hydration is important in cold environments as well as hot. Level B or C requires that the outermost garment be a chemical resistant suit such as Saranex.

## AIR MONITORING EQUIPMENT

Direct reading air monitoring instruments can provide information necessary to make decisions regarding an employee's potential exposure level and can aid in determining what personal protective equipment to use.

Airborne contaminant concentration information shall be used to:

- Establish work zones;
- Determine the level of personal protective equipment required;
- Assist the Case Agent / Site Safety Officer and Criminalist to determine the potential hazards.
- The following instruments should be used to provide ongoing air monitoring information concerning hazards at the scene:
- Combustible gas indicators/oxygen deficiency meters;
- Colorimetric indicator tubes (eg. Dräger Tubes);
- Photoionization monitors, infrared analyzers and other compound-specific direct-reading devices may also provide useful information regarding atmospheric contaminants, and should be used as resources permit.

## COMBUSTIBLE GAS INDICATOR/OXYGEN DEFICIENCY METER

Combustible Gas Indicator

Combustible gas indicators are used to measure the concentration of flammable vapors or gases in the air. The results are expressed as a percentage of the Lower Explosive Limit (LEL) of the vapor or gas.

The advantages of using this type of instrument include:

- Direct reading;
- Easy to operate;

- Portable;
- Built in audible alarms.
- The limitations of this type of instrument include:
- Combustible gas indicators are intended for use only in normal oxygen atmospheres;
- Oxygen deficient or enriched atmospheres can produce false readings; certain substances (i.e., leaded gasoline vapors) can affect the meter's ability to respond correctly.

Oxygen Deficiency Meter

Oxygen deficiency meters are used to determine the percentage of oxygen present in the environment. An environment that is below 19.5% is legally considered oxygen deficient.

The advantages of using this type of instrument include:

- Immediate response;
- Simple to operate;
- Portable;
- Built-in audible alarms.
- The limitations of this type of instrument include:
- At sub-surface or high altitudes, the meter will give erroneous results unless it is calibrated for that altitude;
- High concentrations of carbon dioxide (CO2) will shorten the useful life of the oxygen sensor,
- Temperature can affect the accuracy of the instrument;
- Strong oxidizing chemicals (i.e., bromine, fluorine and chlorine) can cause the instrument to indicate a higher percentage of oxygen than is actually present in the environment.

## COLORIMETRIC INDICATOR TUBES

Colorimetric tubes are glass tubes impregnated with a chemical that will change color when exposed to certain types of chemicals. These tubes are connected to a pump and a known volume of air is pulled through the tube. The presence of a chemical in the air will be indicated by a visible color change.

The advantages of using the colorimetric tubes are:

- Simple to use;
- Relatively quick response;
- Wide range of chemical tubes available;
- Portable.

- The limitations of using the colorimetric tubes are:
- Error factor for some tubes have been reported up to 50%;
- Temperature can affect the chemical reaction inside the tube;
- Shelf life of the tubes is from one to three years;
- Some tubes will cross-react with other chemicals;
- Reaction time of tubes.

## PHOSPHINE DETECTOR

Phosphine detectors are small battery powered instruments designed to be worn in the worker's breathing zone. Use of these detectors is recommended whenever a hydriodic acid/red phosphorus lab is being processed.

## CALIBRATION

Each illegal drug laboratory investigator is responsible for calibrating the instruments according to the manufacturer's instruction and prior to each use in the field.

## CONTINGENCY PLAN

A Contingency Plan, or Emergency Action Plan, shall be followed in case of an emergency at a clandestine laboratory site. Since the hazards found at clan labs may be different for each location, these guidelines are general in nature. Specific hazards for each site shall be stated on the Hazard Assessment and Recognition Plan (HARP) and will be posted at the site before work begins. When an emergency arises, the Site Safety Officer shall advise the On-Site Supervisor of the situation as soon as possible. . It is the responsibility of the On-Site Supervisor to ensure that departmental procedures and emergency protocols are followed.

If an employee is injured or has suffered from a chemical or physical exposure, the employee shall receive immediate medical attention. The injured employee shall be decontaminated to the greatest extent possible and emergency personnel notified. If the clan site contains potential hazards where specialized emergency rescue is required (i.e. confined space rescue), an emergency response team trained in this type of emergency will be notified and be on site before work at the clan lab investigation begins.

## EMERGENCY EQUIPMENT

It is imperative that equipment essential to containing, extinguishing, or abating a hazard at a clan lab is available. If emergency equipment is not available at the clan lab site, personnel may not enter the contaminated area. Equipment used for emergencies shall be located on each Emergency Response Vehicle, and shall include;

- Emergency eyewash (OSHA approved)
- Emergency shower
- First aid kit

- Fire extinguisher (Rated for type A, B , and C fires)
- Material safety data sheets (MSDS)
- Absorbent material

In the event that an evacuation of the clan lab site is necessary, a rendezvous point must be pre-selected. All evacuation routes should be determined prior to any employees being allowed to enter the contaminated area. Evacuation routes should be clearly marked indicating safe routes out of the area. For confined space entries, additional precautions may be necessary. Refer to the Confined Space Entry section for further information.

## SECURING AND DISMANTLING PROCEDURES

The following phases shall be used in the securing and dismantling of clandestine laboratory scenes. These phases include:

- Planning;
- Entry;
- Pre-Assessment;
- Assessment;
- Processing;
- Disposal.

## PLANNING

This is the initial phase of all clandestine laboratory enforcement actions. This phase includes:

- Evaluating all available information about the chemicals at the scene to develop the HARP form;
- Developing emergency evacuation and medical treatment plans;
- Coordinating service of search warrants with allied agencies;
- Ensuring adequate personnel and safety equipment are available;
- Initiating the HARP form;
- Ensuring participants are briefed on issues of safety and procedures;
- Case Agent designating the Site Safety Officer.

## RAID BRIEFING

Pre-raid briefings of all personnel will be conducted prior to entering a scene. These briefings will discuss the activities to be performed considering health and safety issues and the necessary protective equipment. The briefing will be conducted by the Case Agent or his/her designee and documented on the HARP form, Appendix X. No employee shall be allowed to enter the scene without being provided a health and safety briefing.

## ENTRY

For purposes of this safety manual only, entry is defined as the initial entry into a building by law enforcement personnel pursuant to the investigation of illegal drug manufacturing. Entries into buildings where suspects are or might be present will be accomplished using a minimum of level C protection unless the laboratory qualifies as a confined space, in which case initial level B protection is required. Once the building has been cleared of suspects the site supervisor will direct the pre-assessment or assessment phase to begin utilizing proper safety equipment as determined by the site safety officer.

Whenever possible the entry team will consist of HAZMAT certified law enforcement personnel. No entry into a suspected lab site will be conducted without a safety briefing.

Entries into unoccupied buildings that contain a cooking drug lab will be made using Level B protection until air monitoring has shown that Level B is no longer necessary. This decision will be made by the Site Safety Officer.

## PRE-ASSESSMENT

This phase shall only be used at non-operational laboratory sites and may be conducted by laboratory safety certified law enforcement officers.

- Determine level of personal protective equipment required;
- Establish site control zones;
- Begin ventilation;
- Photograph scene;
- Document evidence location;
- Conduct air monitoring;
- Separate all chemicals except those that present an obvious hazard.

This phase shall not be used if any obvious hazards, or unknown chemicals, are present. If any safety concerns arise, discontinue this phase and wait for arrival of a criminalist.

<u>Assessment</u>

The assessment team shall be comprised of at least two laboratory safety certified personnel. This phase includes:

- Determining the level of personal protective equipment required for this phase;
- Identifying and/or verifying site hazards for known or suspected hazardous conditions;
- Deactivating and ventilating as needed;
- Informing the Site Safety Officer of all observed chemicals and perceived hazards;
- If necessary, reviewing the Material Safety Data Sheets (MSDS) and any other available literature for chemical information regarding chemicals at the scene;

- Using the above information to establish site control zones and determine the level of PPE needed for the next phase;
- Notifying the hazardous waste hauler.
- Labs inside buildings or other spaces that do not have good ventilation and ANY lab where cooking has been in process when the lab was entered: SCBA shall be used until the atmospheric content can be determined to be safe.
- Non-cooking Labs with good ventilation, or boxed labs: A full-facepiece respirator with standard cartridges will be used as a precaution until it can be determined that none of the containers are open and leaking.
- Air monitoring instruments (Lower Explosive Limit = 0%, Oxygen >19.5% or less than 23.5%, Phosphine <0.3 ppm) will be used to determine whether respiratory protection is no longer necessary. Colorimetric tubes may also be used for other contaminants, such as hydrogen chloride (<5 ppm).

Processing

No site containing hazardous chemicals will be processed unless 2 safety certified personnel are at the scene. The processing team should be comprised of laboratory safety certified law enforcement personnel and laboratory safety certified scientific support personnel and a site officer. Dismantling, if necessary, shall be directed by the site supervisor in consultation with a laboratory safety certified Criminalist, and the site officer, and shall include:

- Photographs shall be taken prior to dismantling;
- Identifying, documenting and collecting evidence;
- Following all of the guidelines outlined on the evidence sampling, transporting and storage section of this manual (page 48);
- Under no circumstances shall personnel deliberately use their sense of smell to identify hazardous materials;
- Photographs of all samples shall be taken together with the original containers;
- Photographs shall be taken of any evidence items to be removed from the scene;
- Photographs shall be taken of any items from which latent prints are taken;
- Latent Print Analysts shall not process any contaminated items, without wearing PPE to a level determined by the Site Safety Officer.
- All latent print lift cards or any other items to be submitted to the latent print laboratory shall be sealed in poly evidence pouches or other appropriate containers at the scene.

## EXPOSURE RECORDS AND INCIDENTS

## EXPOSURE RECORDS

The Hazard Assessment and Recognition Plan (HARP) is a site specific document which provides a chronological compilation of hazards and chemical information as it is developed through the course of the investigation. The HARP form is used to document:

- Field activities of the employee;
- Duty assignments; Level of protection worn by the employee;
- Information used for future medical evaluation and/or epidemiological research.
- Air monitoring results.

A HARP form shall be generated for each clandestine laboratory investigation.

## EMPLOYEE EXPOSURES/INCIDENTS

If any employee working at a clandestine drug lab site is exposed to hazardous chemicals that affect the health of the person an incident form will be completed and the employee will be transported to the nearest hospital capable of treating the exposure. A list of chemicals known or suspected to be present in the drug lab should accompany the injured employee to the hospital so that proper treatment can be rendered.

The planning phase of the investigation details specific procedures for prompt medical attention in the field. However, by the nature of some chemical exposures, delayed effects may be felt or observed several days after the initial exposure. The employee's supervisor is responsible for assuring prompt medical treatment.

## CONFINED SPACE ENTRY PROCEDURES

Many times clandestine drug labs are found buried underground, or enclosed in such a way that entering them requires utilizing a small crawl space. Entering these types of labs requires following a Permit-Required Confined Space Entry procedure.

<u>Definitions</u>

A Confined Space is one that:

- Is large enough and so arranged that an employee can physically enter and perform assigned work; and
- Has limited or restricted means of entry or exit; and
- Is not designed for continuous employee occupancy.
- A Permit-Required Confined Space also contains the following parameters:
- Has or may have the potential to develop a hazardous atmosphere;
- Contains materials that could engulf entrants;

- Has shape that may entrap entrants;
- Contains any serious safety or health hazards.

Any confined space found at a clandestine drug lab should always be treated as a permit-required confined space, since the manufacture of methamphetamine or other illicit drugs use hazardous chemicals. A danger sign, or danger tape shall be placed around the entrance of the confined space, alerting personnel of its existence and location. A permit shall also be completed before entry and posted at the site. The permit for entry is valid for the duration of the job or task and shall be canceled upon completion.

Monitoring for Hazards at a Confined Space

Before entering a confined space, the atmosphere of the space must be monitored for oxygen content, flammability, and levels of toxic contaminants. Conditions are deemed hazardous and entry is not allowed when;

- Oxygen content is less than 19.5% or greater than 23.5 %;
- Flammable gas, vapor, or mist is in excess of 10 percent of its Lower Explosive Limit (LEL);
- Airborne toxic contaminants are at levels considered to be Immediately Dangerous to Life and Health (IDLH).

If any of the above conditions exist, ventilation of the space will be required before entry. Continuous monitoring for flammable gas and oxygen content must be performed at all times while the team is in the space. If any of the above conditions arise after entry has been made, personnel must exit the space immediately and ventilate the space until air monitoring verifies conditions are acceptable for re-entry.

General Requirements for Entry

- Once conditions of the confined space have been monitored and are acceptable for entry, an entry team consisting of at least two lab certified individuals will enter the space. All entry teams will enter on the Buddy System utilizing level B personal protective equipment and will monitor each others condition while in the space. An attendant shall stay outside the confined space entrance in constant communication with the entrants, and shall be equipped with an SCBA to aid in rescue of the entrants in case of an emergency. Downgrading to level C personal protective equipment will only be allowed once it is verified that the potential for a hazardous atmosphere no longer exists

An entry supervisor shall also be available during entry of a confined space. In situations where an attendant and an entry supervisor are not both available, the attendant may also act as the entry supervisor.

Training Requirements

Employees shall be lab certified and have an understanding of the recognition, evaluation, and control of hazards associated with a confined space. Training topics for all personnel working with a confined space shall include;

- Atmosphere monitoring and ventilation;
- Confined space communication;
- Emergency, self rescue, and rescue operations;
- Hazard communication- MSDS;
- Hazard recognition and control;
- Injury and illness.

Personnel Duties

Personnel performing the following duties should be free from other duties or tasks which could interfere with their ability to function properly in a confined space.

Authorized entrants must:

- Be familiar with confined space hazards at a clan lab;
- Be able to properly use personal protective equipment and monitoring equipment;
- Communicate with attendant as necessary;
- Alert attendant of dangerous/prohibited conditions;
- Exit as quickly as possible when necessary.

Attendants must:

- Know hazards that may exist in the confined space;
- Be aware of behavioral effect of hazard exposure on entrants;
- Maintain accurate count of entrants;
- Remain outside space until relieved by another attendant;
- Stay in constant communication with entrants;
- Monitor inside and outside activities for safety, evacuate if necessary;
- Summon emergency/rescue service if necessary;
- Prohibit unauthorized entry;
- Perform non-entry rescue.

Entry Supervisor

- Verify all aspects of permit are in place before allowing entry;
- Sign entry permit to authorize entry;
- Determine that acceptable entry conditions are maintained;
- Terminate entry and cancel permit as necessary;
- Verify available rescue services;

- Remove unauthorized personnel;
- Complete and sign entry permit, and post where visible to entrants.

Rescue/Emergency

Confined space rescue and emergency services are required to be on-site for a confined space rescue. Personnel who provide these services are to be trained specifically in confined space rescue, and be CPR and First Aid certified.

## EVIDENCE SAMPLING, TRANSPORTING AND STORAGE

Evidence collection is vital to the successful prosecution of a person charged with manufacturing an illicit drug. Therefore, it is essential that selected items of evidence are properly collected and packaged. To ensure that this task is accomplished, the Case Agent working with the Criminalist shall determine what items need to be collected at the scene. Specific collection requirements include:

- No more than one ounce of a hazardous liquid or solid shall be placed into an inner sample container (KAPAK, Scotch PAK or other chemical resistant containers) which will be transported from one location to another (40 CFR 173.4).
- Seal each of the inner sample containers in a chemical resistant evidence pouch;
- Place the chemical resistant evidence pouches in a five gallon evidence container containing absorbent;
- Transport the samples from the scene to the regional laboratory or give the samples to the case agent for later transport to the crime lab.
- The five-gallon evidence container is a DOT approved plastic bucket with separate sealable lids.
- The Case Agent shall be responsible to ensure that all evidence is properly marked for identification and transported from the laboratory after analysis to the storage facility.
- The Case Agent shall be responsible to ensure that all evidence is stored safely and disposed of according to law.

# APPENDIX VI
# SUGGESTED GUIDELINES FOR MEDICAL CERTIFICATION

## Suggested Guidelines for Medical Certification
## Joint Federal Task Force of
## Drug Enforcement Administration
## U.S. Environmental Protection Agency
## U.S. Coast Guard

The following elements are suggested for the initial medical evaluation of individuals who are to be considered for a medical clearance to work in clandestine drug laboratories. Additional elements may be added based on local considerations.

**I. GENERAL MEDICAL HISTORY:**

History of current complaints and illnesses, if any. Review of systems: special emphasis on the skin, respiratory, cardiovascular and neurologic systems. Questions about use of respirators and protective gear, including problems with their use and history of claustrophobic reactions. History of heat injury. Medications, smoking history, alcohol use. Reproductive history. Exercise capacity. Occupational and exposure history.

**II. GENERAL MEDICAL EXAMINATION:**

Vital signs. Examination with emphasis on the skin, respiratory, cardiovascular, hepatic and neurologic systems.

**III. LABORATORY TESTS:**

CBC
Blood chemistries that include kidney and liver function tests. Urinalysis

**IV. OTHER TESTS**

Spirometry, including FVC, FEV, and FEF 25-75 conforming to NIOSH standards. Resting 12 lead electrocardiogram. Exercise stress test, chest radiograph, and other medical tests if medically indicated.

# APPENDIX VII
# LETTER TO PHYSICIAN FOR MEDICAL CERTIFICATION OF STATE AND LOCAL OFFICERS

# Letter to Physician for Medical Certification of State and Local Officers

Dear Dr. _____ :

The purpose of this medical examination is to obtain a medical clearance for work during seizure of illegal drug laboratories in compliance with the worker protection rule for hazardous waste operations and emergency response (29 CFR 1910.120). In addition to traditional law enforcement activities, the examinee will be required to use personal protective equipment for protection from chemical exposures.

The personal protective equipment, workplace and environmental factors of concern are described below. Suggested guidelines for the medical evaluation are attached.

**Protective Equipment:** Will use a (single or twin) cartridge, (full or half) face mask, _____ (brand) Air Purifying Respirator (APR) from _____ (manufacturer). Our employees will also be using a _____ (brand), positive pressure, Self Contained Breathing Apparatus (SCBA) from _____ (manufacturer). Agents will use neoprene boots, chemically resistant gloves, and a chemically resistant suit of Tyvek or Saranex.

**Type of Work:** Includes pursuit, confrontation, control and arrest of suspect which may involve strenuous physical activity. This type of work includes light to moderate physical exertion while wearing personal protective equipment with increased work of breathing, cardiovascular stress and heat load. Includes responsibility for the safety of others and responsiveness in rescue and emergency situations. Such work may be done daily or once a month or less, up to 8 hours at a time.

Work Setting: Work in uncontrolled, poorly ventilated, makeshift laboratories with unidentified chemical processes in progress. Potential for fire, explosion and chemical spills is likely. Potential for exposure to organic solvents, inorganic acids and alkalis, cyanides, other drug precursors, unknown chemicals reactants, and by-products of chemical reactions, controlled substances in solution or powdered form. Such work includes indoors and outdoors in extremes of seasonal environmental temperatures and humidity. Prior acclimation to hot environments is unlikely.

If there are any abnormalities such as cardiovascular or respiratory conditions, musculoskeletal problems, lapses of consciousness, sensitivity to heat injury, or other medical conditions that would present an unusual risk of harm to the individual or to others in performing these duties, please notify me as soon as possible.

If you find the individual cleared for performing the duties described above, please sign and date the certification below and return it to me. Thank you for your help.

Sincerely Yours,

# Medical Certification

I examined _____ (Name) on _____ (date) and find the individual to be medically able to perform the duties described above without unusual medical risk of harm to the individual or others.

Occupational Physician's Signature _____

Date _____

Printed Name _____

# APPENDIX VIII
# CHEMICAL EXPOSURE REPORT

# Chemical Exposure Report

This form will be completed by each employee who is exposed to chemicals in an uncontrolled environment such as those involving clandestine laboratories, hazardous material incidents, and chemical accidents.

Name:_____ Division:_____ Work Unit_____ __

Date of Exposure:_____

Length of Exposure:_____ hours _____ minutes

Location: Address:_____ County:_____

Chemicals Involved:

| Type: | Quantity: | Unusual Contact/Exposure |
|---|---|---|
| _____ | _____ | _____ ___ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

List personal protective equipment used by employee:

Signs or symptoms of exposure (cough, nose bleed, rash, etc.), if any

Medical treatment obtained: _____Yes _____ No

If Yes, treatment obtained from:_____ Date:_____

Description of incident, including circumstances of exposure, activities performed which involved exposure, others present and their involvement: (Use additional pages as necessary).

Signature of employee:_____ Date:_____

# APPENDIX IX
# OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE

# MEDICAL EVALUATION QUESTIONNAIRE

**(ADAPTED FROM OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE, 29 CFR 1919.134 APPENDIX C)**

Each participant is requested to fill out this initial Medical Form and bring with him/her at the time of the initial examination. Every question in this form is important as a part of complete and thorough examination. This information, along with the results of you entire examination, are part of the health surveillance program.

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee: Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

**1. Today's date**: _____

**2. Your name**: _____

**3. Your age (to nearest year)**: _____

**4. Sex (circle one)**: Male/Female

**5. Your height**: _____ **ft**. _____ **in**.

**6. Your weight**: _____ **lbs**.

**7. Your job title**: _____

**8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code)**: _____

**9. The best time to phone you at this number**: _____

**10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one)**: Yes/No

**11. Check the type of respirator you will use (you can check more than one category):**
a. _____ N, R, or P disposable respirator (filter-mask, non- cartridge type only).
b. _____ Other type (for example, half- or full-face piece type, powered-air purifying, supplied air, self-contained breathing apparatus).

**12. Have you worn a respirator (circle one)**: Yes/No
If "yes," what type(s): _____
_____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

**1. Do you currently smoke tobacco, or have you smoked tobacco in the last month**: Yes/No

**2. Have you ever had any of the following conditions?**
a. Seizures (fits): Yes/No
b. Diabetes (sugar disease): Yes/No
c. Allergic reactions that interfere with your breathing: Yes/No
d. Claustrophobia (fear of closed-in places): Yes/No
e. Trouble smelling odors: Yes/No

**3. Have you ever had any of the following pulmonary or lung problems?**
a. Asbestosis: Yes/No
b. Asthma: Yes/No
c. Chronic bronchitis: Yes/No
d. Emphysema: Yes/No
e. Pneumonia: Yes/No
f. Tuberculosis: Yes/No
g. Silicosis: Yes/No
h. Pneumothorax (collapsed lung): Yes/No
i. Lung cancer: Yes/No
j. Broken ribs: Yes/No
k. Any chest injuries or surgeries: Yes/No
l. Any other lung problem that you've been told about: Yes/No

**4. Do you currently have any of the following symptoms of pulmonary or lung illness?**
a. Shortness of breath: Yes/No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
d. Have to stop for breath when walking at your own pace on level ground: Yes/No
e. Shortness of breath when washing or dressing yourself: Yes/No
f. Shortness of breath that interferes with your job: Yes/No
g. Coughing that produces phlegm (thick sputum): Yes/No
h. Coughing that wakes you early in the morning: Yes/No
i. Coughing that occurs mostly when you are lying down: Yes/No
j. Coughing up blood in the last month: Yes/No
k. Wheezing: Yes/No
l. Wheezing that interferes with your job: Yes/No
m. Chest pain when you breathe deeply: Yes/No
n. Any other symptoms that you think may be related to lung problems: Yes/No

**5. Have you ever had any of the following cardiovascular or heart problems?**
a. Heart attack: Yes/No
b. Stroke: Yes/No
c. Angina: Yes/No
d. Heart failure: Yes/No
e. Swelling in your legs or feet (not caused by walking): Yes/No
f. Heart arrhythmia (heart beating irregularly): Yes/No
g. High blood pressure: Yes/No
h. Any other heart problem that you've been told about: Yes/No

**6. Have you ever had any of the following cardiovascular or heart symptoms?**
a. Frequent pain or tightness in your chest: Yes/No
b. Pain or tightness in your chest during physical activity: Yes/No
c. Pain or tightness in your chest that interferes with your job: Yes/No
d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
e. Heartburn or indigestion that is not related to eating: Yes/ No
f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

**7. Do you currently take medication for any of the following problems?**
a. Breathing or lung problems: Yes/No
b. Heart trouble: Yes/No
c. Blood pressure: Yes/No
d. Seizures (fits): Yes/No

**8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)**
a. Eye irritation: Yes/No
b. Skin allergies or rashes: Yes/No
c. Anxiety: Yes/No
d. General weakness or fatigue: Yes/No
e. Any other problem that interferes with your use of a respirator: Yes/No

**9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire:** Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

**10. Have you ever lost vision in either eye (temporarily or permanently)**: Yes/No

**11. Do you currently have any of the following vision problems?**
a. Wear contact lenses: Yes/No
b. Wear glasses: Yes/No
c. Color blind: Yes/No
d. Any other eye or vision problem: Yes/No

**12. Have you ever had an injury to your ears, including a broken ear drum**: Yes/No

**13. Do you currently have any of the following hearing problems?**
a. Difficulty hearing: Yes/No
b. Wear a hearing aid: Yes/No
c. Any other hearing or ear problem: Yes/No

**14. Have you ever had a back injury**: Yes/No

**15. Do you currently have any of the following musculoskeletal problems?**
a. Weakness in any of your arms, hands, legs, or feet: Yes/No
b. Back pain: Yes/No
c. Difficulty fully moving your arms and legs: Yes/No
d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
e. Difficulty fully moving your head up or down: Yes/No
f. Difficulty fully moving your head side to side: Yes/No
g. Difficulty bending at your knees: Yes/No
h. Difficulty squatting to the ground: Yes/No
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

**1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen**: Yes/No
If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

**2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals**: Yes/No
If "yes," name the chemicals if you know them: _____
_____
_____

**3. Have you ever worked with any of the materials, or under any of the conditions, listed below:**
a. Asbestos: Yes/No
b. Silica (e.g., in sandblasting): Yes/No
c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
d. Beryllium: Yes/No
e. Aluminum: Yes/No
f. Coal (for example, mining): Yes/No
g. Iron: Yes/No
h. Tin: Yes/No
i. Dusty environments: Yes/No
j. Any other hazardous exposures: Yes/No
If "yes," describe these exposures: _____
_____
_____

**4. List any second jobs or side businesses you have**:_____
_____

**5. List your previous occupations**:_____
_____

**6. List your current and previous hobbies**: _____
_____

**7. Have you been in the military services**? Yes/No
If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

**8. Have you ever worked on a HAZMAT team**? Yes/No

**9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications)**? Yes/No
If "yes," name the medications if you know them: _____ `

**10. Will you be using any of the following items with your respirator(s)?**
a. HEPA Filters: Yes/No
b. Canisters (for example, gas masks): Yes/No
c. Cartridges: Yes/No

**11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?**
a. Escape only (no rescue): Yes/No
b. Emergency rescue only: Yes/No
c. Less than 5 hours per week: Yes/No
d. Less than 2 hours per day: Yes/No
e. 2 to 4 hours per day: Yes/No
f. Over 4 hours per day: Yes/No

**12. During the period you are using the respirator(s), is your work effort:**
a. Light (less than 200 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.
b. Moderate (200 to 350 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
c. Heavy (above 350 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:_____hrs._____mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

**13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator**: Yes/No
If "yes," describe this protective clothing and/or equipment: _____
_____

**14. Will you be working under hot conditions (temperature exceeding 77 deg. F)**: Yes/No

**15. Will you be working under humid conditions**: Yes/No

**16. Describe the work you'll be doing while you're using your respirator(s):**

_____
_____

**17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):**

_____
_____

**18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):**
Name of the first toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
Name of the second toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
Name of the third toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
The name of any other toxic substances that you'll be exposed to while using your respirator:

_____
_____
_____

**19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):**

_____

# APPENDIX X
# EXAMPLE HAZARD ASSESSMENT AND RECOGNITION PLAN/SITE HEALTH AND SAFETY PLAN

## CLANDESTINE LABORATORY SITE SAFETY PLAN

### A. FILE INFORMATION

| Office | County | Date Seized | Case No. |
|---|---|---|---|

Site Safety Officer (Name) (Agency)

Chemist (Name) (Agency)

### B. LABORATORY TYPE AND HAZARDS

**Laboratory Type (Check)**

- ☐ Methamphetamine ☐ Amphetamine
- ☐ Cocaine ☐ Fentanyl
- ☐ P2P ☐ PCP
- ☐ LSD ☐ Boxed (Specify)

Other:_____

- ☐ Operational ☐ Non-Operational

Production Method:_____

**Chemical Hazards (Check)**

- ☐ Acid gases ☐ Flammable Atms.
- ☐ Ammonia ☐ Oxidizers
- ☐ Asphyxiates ☐ Oxygen deficiency
- ☐ Carcinogens ☐ Phosphine
- ☐ Corrosives ☐ Pyrophorics
- ☐ Explosives ☐ Water Reactives
- ☐ Flammables ☐ Skin Absorbers

Specific High Hazard Chemicals

**Other Hazards (Check)**

- ☐ Comp Gas Cylinder ☐ Slip/Trip/Fall Hazard
- ☐ Heat Stress ☐ Electrical Shock
- ☐ Cold Stress ☐ Burn Hazard
- ☐ Confined Space ☐ Leaking Containers
- ☐ Limited Egress ☐ Damaged Structure
- ☐ Poor Visibility ☐ Excavation

### C. SITE DESCRIPTION

**Lab Address**

**Site Location & Description**

**Structure Description**

**Weather Conditions:**

| Wind Direction & Velocity | Temperature | Rain Snow | Humidity |
|---|---|---|---|

| **Estimated Time** | | | **Estimated Lab Size** |
|---|---|---|---|
| Entry Min. | Assessment Min./Hr. | Processing Min./Hr. | Small Med. Large |

### D. OTHER SUPPORT

| Support | Name (Include jurisdiction) | Telephone Number | Standby Location | Contacted (Name) | Notified Date / Time |
|---|---|---|---|---|---|
| Fire Dept. | | ( ) – | | | / |
| Ambulance/EMS | | ( ) – | | | / |
| Hospital E R | | ( ) – | Address | | / |
| Disposal Company | | ( ) – | | | / |
| Other | | ( ) – | | | / |

## E. TEAM MEMBER ASSIGNMENTS

| **Team Members** (Enter Name, Agency & Check Assignment Box: E=Entry, A=Assessment, P=Processing) | | | | **Team Members** (Enter Name, Agency & Check Assignment Box: E=Entry, A=Assessment, P=Processing) | | | |
|---|---|---|---|---|---|---|---|
| | E | A | P | | E | A | P |
| 1. | | | | 6. | | | |
| 2. | | | | 7. | | | |
| 3. | | | | 8. | | | |
| 4. | | | | 9. | | | |
| 5. | | | | 10. | | | |

## F. CL RESPONSE VEHICLE CHECKLIST

| ☐ **CLRV Used At Scene** | ☐ **CLRV NOT USED At Scene** |
|---|---|
| ☐ Plastic Sheeting | ☐ Shower Water |
| ☐ Duct Tape | ☐ Eyewash Unit |
| ☐ Exhaust Fan | ☐ Eyewash Fluid |
| ☐ Gas Tech | ☐ Fire Extinguisher |
| ☐ Drager Kit/Tubes | ☐ First Aid Kit |
| ☐ Wading Pool | ☐ Work Table |
| ☐ Plastic Bags | ☐ Drinking Water |
| ☐ Water Hose | ☐ Block Bags |
| ☐ Extension Cords | ☐ GBI Form 20 |
| ☐ SCBA Bottles | ☐ Disinfectant |
| ☐ Cartridges for APR | ☐ References |
| ☐ Tyvek Suits | ☐ Sample Jars |
| ☐ Nitrile Gloves | ☐ Pipettes |

## G. STAGES OF RAID

| Equipment Requirements | Entry | Assessment | Processing |
|---|---|---|---|
| SCBA | | | |
| Air Purifying Resp. | | | |
| Cartridge–GME-P100 | | | |
| Tyvek Suit | | | |
| Nomex Suit | | | |
| Field Boots | | | |
| Chemical Boots | | | |
| Boot Covers (Booties) | | | |
| Outer Gloves | | | |
| Outer Glove Liners | | | |
| Hard Hat | | | |
| Face Shield | | | |
| Ballistic Vest | | | |
| Other | | | |

**Hazard Assessment Findings**

1. Record location of atmosphere tests
2. Record LEL, PPM, and Oxygen reading for each location
3. If instrument is equipped with an additional toxic sensor, record reading
4. Record Drager Tube readings for locations tested

| Location | LEL | PPM | Oxygen | Toxic | Acetic Acid 5/a | **Ammonia 5/b** | Chloroform 2/a | **Hydrochloric Acid 1/a** | Hydrocyanic Acid 2/a | **Phosphine 0.1/a** | Triethylamine 5/a | Other: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## J. COMMENTS

## Site Sketch

| **Team Safety Officer** *(Signature & Date)* | **Case Agent** *(Signature & Date)* | **Supervisor** *(Signature & Date)* |
|---|---|---|
| | | |

# APPENDIX XI
# EPIC - NATIONAL CLANDESTINE LABORATORY SEIZURE REPORT

OMB NO. 1117-0042
EXP. DATE: 04/30/2007

## NATIONAL CLANDESTINE LABORATORY SEIZURE REPORT

**Entered data must meet 28 CFR Part 23 guidelines.**

**TYPE OF REPORT***

- ☐ Lab Seizure
- ☐ Chem/Glassware/Equip Seizure (Only)

**I Reporting Office (An asterisk symbol (*) indicates a mandatory field)**

| Seizure Date* (MMDDYYYY) | Agency* | ORI* | Agency City* |
|---|---|---|---|
| | | | |

| Agency State* | Case or File Number* | File Title |
|---|---|---|
| | | |

| Reporting Officer/Agent Name* (First, Last) | Telephone Number* ( ) | COPS Number (DEA 'S' Number) |
|---|---|---|
| | | |

**II Seizure Location* (Check one – put additional information in Remarks Section)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ☐ | Apartment/Condo | ☐ | Hotel/Motel | ☐ | Family Dwelling | ☐ | Storage Locker | ☐ | Business |
| ☐ | Outbuilding | ☐ | Vehicle | ☐ | Dumpster | ☐ | Open – No Structure | ☐ | Other – Describe: |

**III Seizure Neighborhood (Check most appropriate)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ | Commercial/Industrial | ☐ | Rural | ☐ | Suburban | ☐ | Urban |
| ☐ | Public Land – Name: | | | ☐ | Other – Describe: | | |

**IV Estimated Lab Capacity (Based on seized chemicals, glassware, and equipment on site) (Mandatory if lab seizure is checked)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | Under 2 Oz. | ☐ | 2 – 8 Oz. | ☐ | 9 Oz. – 1 Lb. | ☐ | 2 – 9 Lbs. | ☐ | 10 – 19 Lbs. | ☐ | 20 Lbs. or Greater |

**V Laboratory Status (Check all that apply) (Mandatory if lab seizure is checked)**

| | | | | | |
|---|---|---|---|---|---|
| ☐ | Operational – **Not** in Production | ☐ | Abandoned | ☐ | Explosion/Fire |
| ☐ | Operational – In Production | ☐ | Boxed/Dismantled | ☐ | Other – Describe: |

**VI Lab Manufacturing Process (Check ONLY one)**

| | | | | | |
|---|---|---|---|---|---|
| ☐ | **Ephedrine**/Red "P"/Hydriodic Acid Reduction and/or Iodine Reduction | ☐ | **Ephedrine**/Lithium, Sodium or Potassium/ Anhydrous Ammonia (Nazi/Birch) | ☐ | Ephedrine Tablet Extraction |
| ☐ | **Pseudoephedrine/**Red "P"/Hydriodic Acid and/or Iodine Reduction | ☐ | **Pseudoephedrine**/Lithium, Sodium or Potassium/ Anhydrous Ammonia (Nazi/Birch) | ☐ | Pseudoephedrine Tablet Extraction |
| ☐ | P2P/Methylamine | ☐ | Hydriodic Acid Manufacturing | ☐ | Ice Conversion |
| ☐ | Hydrogenation | ☐ | Anhydrous Ammonia Manufacturing | ☐ | Other – Describe: |

**VII Laboratory Equipment (Continue in Remarks)**

| | | | |
|---|---|---|---|
| ☐ | Homemade/Improvised | ☐ | Professional/Retail |

Store Name:
City:

**VIII Laboratory Type (Check all that apply)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ☐ | Amphetamine | ☐ | Tablet Extraction | ☐ | Anhydrous Ammonia | ☐ | Methamphetamine | ☐ | Ice Conversion |
| ☐ | Hydriodic Acid | ☐ | GHB | ☐ | MDMA | ☐ | Methcathinone | ☐ | PCP |
| ☐ | Other – Describe: | | | | | | | | |

**IX Seizure/Laboratory Address**

| Street # | Dir (E,S, etc.) | Street Name | Suffix (St. Ave., etc.) | Unit # (Apt) | Box # |
|---|---|---|---|---|---|
| | | | | | |

| City | County* | State* | Zip Code | Latitude/Longitude |
|---|---|---|---|---|
| | | | | |

| X Chemist and Cleanup Personnel* | | | |
|---|---|---|---|
| Chemist on Site<br>☐ None ☐ State/Local ☐ DEA | Hazmat Contractor Utilized<br>☐ Yes ☐ No | Name of Hazmat Contractor | Evaluation of Hazmat Contractor<br>☐ Excellent ☐ Satisfactory ☐ Poor ** <br>**(Provide details in Remarks Section) |

| XI Persons Affected (Children are mandatory – indicate 0 when none were affected) (Check all that apply and indicate number) | | | |
|---|---|---|---|
| ☐ Total Children Affected (# ) | ☐ Child Injured (# ) | ☐ Child Killed (# ) | ☐ Law Enforcement Injured (# ) |
| ☐ Law Enforcement Killed (# ) | ☐ Suspect Injured (# ) | ☐ Suspect Killed (# ) | |
| Other – Describe: | | | |



**NATIONAL CLANDESTINE LABORATORY SEIZURE REPORT - CONTINUED**

**XII Weapons/Explosives Seized (Check all that apply and continue in Remarks Section)**

| Type (Handgun, Rifle, etc.) | Number | Serial No. | Description (Make, Model, & Caliber) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Booby Trap – Describe:

**XIII Quantity of All Drugs Seized at Lab Site (Check all that apply/Specify amount & unit of measure)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ☐ Amphetamine | Amt | ☐ LSD | Amt | ☐ Methcathinone | Amt |
| ☐ Cocaine | Amt | ☐ MDMA | Amt | ☐ PCP | Amt |
| ☐ GHB/GBL | Amt | ☐ Methamphetamine | Amt | ☐ Other – Describe: | Amt |

**XIV Precursor/Chemical Source (If more than one precursor, continue in Remarks Section)**

Specify Precursor: Source: ☐ Chemical Company ☐ Convenience Store ☐ Retail Outlet ☐ Internet

Store Name: City: State: Country: Other – Describe:

**XV Precursor Agents/Catalysts/Solvents/Reagents Seized (Check all that apply/Specify unit of measure)**

**Precursor Agents (If Ephedrine or Pseudoephedrine is selected, Packaging category is mandatory)**

| ☐ **Ephedrine** Amt | | | | | | ☐ **Pseudoephedrine** Amt | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Packaging:** * | ☐ Unknown | ☐ Powder | ☐ Tablets | ☐ Blister Packs | | **Packaging:** * | ☐ Unknown | ☐ Powder | ☐ Tablets | ☐ Blister Packs | |
| **Source:** | ☐ Domestic | ☐ Canada | ☐ Mexico | | | **Source:** | ☐ Domestic | ☐ Canada | ☐ Mexico | | |

☐ Brand Name(s):

☐ Lot Number(s):

**NOTE: Brand Names and Lot Numbers for chemicals other than ephedrine and pseudoephedrine should be entered in the Remarks Section.**

| | | | | | |
|---|---|---|---|---|---|
| ☐ Benzaldehyde Amt | ☐ GBL Amt | ☐ Piperdine Amt |
| ☐ Benzylchloride Amt | ☐ Methylamine Amt | ☐ P2P Amt |
| ☐ Benzylcyanide Amt | ☐ Phenylpropanolamine Amt | ☐ Other Amt |

**Catalysts/Solvents/Reagents**

| | | | | | |
|---|---|---|---|---|---|
| ☐ Acetone Amt | ☐ Hydriodic Acid (HI) Amt | ☐ PCC Amt |
| ☐ Alcohol Amt | ☐ Hydrochloric Acid (Muriatic) Amt | ☐ Phenylacetic Acid Amt |
| ☐ Aluminum Amt | ☐ Hydrogen Chloride Gas Amt | ☐ Potassium Metal Amt |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | Anhydrous Ammonia | | Amt | ☐ | Hydrogen Gas | | Amt | ☐ | Potassium Permanganate | | Amt |
| ☐ | Benzene | | Amt | ☐ | Hydrogen Peroxide | | Amt | ☐ | Red Phosphorus | | Amt |
| ☐ | Bromobenzene | | Amt | ☐ | Hypophosphorous Acid | | Amt | ☐ | Sodium Chloride (Salt) | | Amt |
| ☐ | Caustic Soda | | Amt | ☐ | Iodine (Crystals) | | Amt | ☐ | Sodium Cyanide | | Amt |
| ☐ | Charcoal Lighter Fluid | | Amt | ☐ | Iodine (Tincture) | | Amt | ☐ | Sodium Dichromate | | Amt |
| ☐ | Chloroform | | Amt | ☐ | Lithium Metal | | Amt | ☐ | Sodium Hydroxide (Lye) | | Amt |
| ☐ | Chromium Trioxide | | Amt | ☐ | Magnesium | | Amt | ☐ | Sodium Metal | | Amt |
| ☐ | Coleman/Camping Fuel | | Amt | ☐ | Mercuric Chloride | | Amt | ☐ | Sulfuric Acid | | Amt |
| ☐ | Cyclohexanone | | Amt | ☐ | Methanol | | Amt | ☐ | Thionyl Chloride | | Amt |
| ☐ | Ether | | Amt | ☐ | Methyl Ethyl Ketone (MEK) | | Amt | ☐ | Toluene | | Amt |
| ☐ | Freon | | Amt | ☐ | Methylsulfonylmethane (MSM) | | Amt | ☐ | Other | | Amt |
| ☐ | Grignard | | Amt | ☐ | Naptha | | Amt | | | | |

**XVI Criminal Affiliation (If applicable)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | Asian Org | ☐ | Mexican Org | ☐ | Militia Group | ☐ | Outlaw Motorcycle Gang | ☐ | Traditional Organized Crime | ☐ | Middle Eastern Group |
| ☐ | Other – Describe: | | | Organization/Gang/Group Name: | | | | | | | |

**USE ADDITIONAL PAGES AS NECESSARY – LOCAL REPRODUCTION AUTHORIZED**



**NATIONAL CLANDESTINE LABORATORY SEIZURE REPORT - CONTINUED**

**XVII Suspect/Criminal Business/Criminal Vehicle Information**

**Suspect #1 Information**

| Last Name (Paternal) | Last Name (Maternal) | First Name | Middle Name |
|---|---|---|---|
| | | | |

| Alias/Moniker | Generation (Jr, Sr, etc.) | ☐ Male ☐ Female | Race | Nationality (US, MX, etc.) |
|---|---|---|---|---|
| | | | | |

| DOB (MMDDYYYY) | Alt DOB (MMDDYYYY) | Height | Weight (Lbs) | Hair Color | Eye Color | Arrested ☐ Yes ☐ No |
|---|---|---|---|---|---|---|
| | | | | | | |

| Phone Type | ☐ Regular | ☐ Cell | ☐ Pager | Phone Number ( ) |
|---|---|---|---|---|
| | | | | |

**Suspect Residence Information**

| Street Number | Dir. (E,S, etc.) | Street Name | Unit # (Apt) | Box # |
|---|---|---|---|---|
| | | | | |

| City | County | State | Country | Zip Code |
|---|---|---|---|---|
| | | | | |

**Involvement (Role) and Identification Numbers**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ☐ | Cook/Chemist | ☐ | Enforcer | ☐ | Smuggler | ☐ | Chemical Courier | ☐ | Criminal Associate |
| ☐ | Distributor | ☐ | Financier | ☐ | Broker | ☐ | Other – Describe: | | |

| Social Security Number | Driver License Number/State |
|---|---|
| FBI Number | Alien Registration Number |
| NADDIS Number | Other Numbers |

**Suspect #2 Information**

| Last Name (Paternal) | Last Name (Maternal) | First Name | Middle Name |
|---|---|---|---|
| | | | |

| Alias/Moniker | Generation (Jr, Sr, etc.) | | Male | | Female | Race | Nationality (US, MX, etc.) |
|---|---|---|---|---|---|---|---|

| DOB (MMDDYYYY) | Alt DOB (MMDDYYYY) | Height | Weight (Lbs) | Hair Color | Eye Color | Arrested | | Yes | | No |
|---|---|---|---|---|---|---|---|---|---|---|

| Phone Type | | Regular | | Cell | | Pager | Phone Number ( ) |
|---|---|---|---|---|---|---|---|

**Suspect Residence Information**

| Street Number | Dir. (E,S, etc.) | Street Name | Unit # (Apt) | Box # |
|---|---|---|---|---|

| City | County | State | Country | Zip Code |
|---|---|---|---|---|

**Involvement (Role) and Identification Numbers**

| | Cook/Chemist | | Enforcer | | Smuggler | | Chemical Courier | | Criminal Associate |
|---|---|---|---|---|---|---|---|---|---|
| | Distributor | | Financier | | Broker | | Other – Describe: | | |

| Social Security Number | Driver License Number/State |
|---|---|
| FBI Number | Alien Registration Number |
| NADDIS Number | Other Numbers |

**Suspect #3 Information**

| Last Name (Paternal) | Last Name (Maternal) | First Name | Middle Name |
|---|---|---|---|

| Alias/Moniker | Generation (Jr, Sr, etc.) | | Male | | Female | Race | Nationality (US, MX, etc.) |
|---|---|---|---|---|---|---|---|

| DOB (MMDDYYYY) | Alt DOB (MMDDYYYY) | Height | Weight (Lbs) | Hair Color | Eye Color | Arrested | | Yes | | No |
|---|---|---|---|---|---|---|---|---|---|---|

| Phone Type | | Regular | | Cell | | Pager | Phone Number ( ) |
|---|---|---|---|---|---|---|---|

**Suspect Residence Information**

| Street Number | Dir. (E,S, etc.) | Street Name | Unit # (Apt) | Box # |
|---|---|---|---|---|

| City | County | State | Country | Zip Code |
|---|---|---|---|---|

**USE ADDITIONAL PAGES AS NECESSARY – LOCAL REPRODUCTION AUTHORIZED**



# NATIONAL CLANDESTINE LABORATORY SEIZURE REPORT - CONTINUED

**Involvement (Role) and Identification Numbers**

| | Cook/Chemist | | Enforcer | | Smuggler | | Chemical Courier | | Criminal Associate |
|---|---|---|---|---|---|---|---|---|---|
| | Distributor | | Financier | | Broker | | Other – Describe: | | |

| Social Security Number | Driver License Number/State |
|---|---|
| FBI Number | Alien Registration Number |
| NADDIS Number | Other Numbers |

**Criminal Business Information (Include all a.k.a.'s)**

Business Name:

| Street Number | Dir. (E, S, etc.) | Street Name | Unit # (Apt) | Box # |
|---|---|---|---|---|

| City | County | State | Country | Zip Code |
|---|---|---|---|---|

| Phone Type | | Regular | | Cell | | Fax | Phone Number ( ) |
|---|---|---|---|---|---|---|---|

| NADDIS Number | Other Numbers *(TECS, Case, etc.)* |
|---|---|

| Criminal Vehicle Information (If applicable) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| License Plate Number | Temporary License Plate # | State | Country | Seized | | Yes | | No |
| VIN Number | Type (Car, SUV, Pickup, etc.) | Make | | | | | | |
| Model | Year | Owner Type | | Privately Owned | | Rental | | Other |

**XVIII DEA Reporting Only**

| GDEP Identifier | | Special Operations Division Supported Case | DEA Office Identifier and Case Number if other than Reporting Office |
|---|---|---|---|
| Special Agent's Name* (First, Last) | | | Phone #* ( ) |

| | Yes | | No | Acknowledgement that the Clan Lab Seizure has been reported to CCF via a standard seizure form and submitted to the Division Asset Removal Group for processing and input into the Consolidated Asset Tracking System. |
|---|---|---|---|---|

**XIX Remarks Section**

| CLSS Help Desk | UNCLASSIFIED FAX: | CLASSIFIED FAX: | E-mail Address | MAILING ADDRESS |
|---|---|---|---|---|
| **1-888-USE-EPIC 873-3742 (Option 7)** | **(915) 760-2913** | **(915) 760-2538** | **clss@epicmail.riss.net** | **El Paso Intelligence Center<br>ATTN: Clan Lab<br>11339 SSG Sims Street<br>El Paso, Texas 79908-8098** |

**USE ADDITIONAL PAGES AS NECESSARY – LOCAL REPRODUCTION AUTHORIZED**

# APPENDIX XII
# EPIC - NATIONAL CLANDESTINE LABORATORY SEIZURE REPORT INSTRUCTIONS

**PURPOSE**: The National Clandestine Laboratory Seizure Report (***EPIC Form 143***) and the Clandestine Laboratory Seizure System (CLSS) include data pertaining to clandestine laboratories seized in the United States by local, State and Federal law enforcement agencies. (***The entered data must meet Department of Justice 28 CFR Part 23 guidelines.***) The CLSS is a Privacy Act System of Records. The records contained in the system are under the control and custody of the Drug Enforcement Administration (DEA), and are maintained in accordance of Federal laws and regulations. Use of the information is limited to law enforcement agencies in connection with activities pertaining to the enforcement of criminal laws. Accordingly, disclosure, release or dissemination of information obtained through accessing the CLSS is strictly prohibited without the express written consent of the DEA. The El Paso Intelligence Center (EPIC) is the central repository for these data. The data will be useful in determining, among other criteria, the types, numbers, and locations of laboratories seized; manufacturing trends; precursor and chemical sources; the number of children and law enforcement officers affected; and investigative leads. The data may also be useful to agencies in justifying and allocating current or future resources. Further information can be obtained on RISS.NET at URL http://clanlab.riss.net.

**TYPE OF REPORT**: (top right corner) Check only one box to indicate the type of seizure being reported.

**LAB SEIZURE**: CLANDESTINE LABORATORY DEFINED: **"An illicit operation consisting of a sufficient combination of apparatus and chemicals that either has been or could be used in the manufacture or synthesis of controlled substances."** Check this box only if the seizure meets this definition.

**CHEM/GLASSWARE/EQUIPMENT SEIZURE**: A seizure of only chemicals, glassware, and/or equipment normally associated with the manufacturing of a controlled/illicit substance, but there is insufficient evidence that the items were used in the manufacture of a controlled/illicit substance.

**DUMPSITE SEIZURE**: A location where discarded laboratory equipment, empty chemical containers, waste by products, pseudoephedrine containers, etc., were abandoned/dumped. There was no lab found with this seizure.

**I. REPORTING OFFICE**: Indicate the date of seizure (MMDDYYYY). Identify the seizing agency, ORI number, agency location (city and state), case or file number, reporting officer (first and last name) and telephone number. These are **mandatory** fields. The file title is not a mandatory field, but it can be queried. The primary subject's name is often times used as the file title. Under "Reporting Officer/Agent" provide the full name and telephone number of the person submitting the information and any other person that can be contacted for further information or investigative referrals. Place additional phone numbers in the Remarks Section. The COPS number ('S' number) is assigned by DEA to agencies requesting DEA funding for lab clean up and should be provided if applicable. If more than one agency was involved in the seizure, the same identifying information can be placed in the database with each participating agency. Place additional agency information in the Remarks Section.

**II. SEIZURE LOCATION**: Check the box that most closely describes the location of the seizure. Vehicle is used for anything on wheels, to include cars, trucks, tractor-trailer, recreational vehicles, etc. Family dwelling includes residences or mobile homes. Use Remarks Section for additional information.

**III. SEIZURE NEIGHBORHOOD**: Check the box that most closely describes the surrounding area. An urban area is a city or town, suburban is the outskirts of a city or town,

and rural is the countryside or an agricultural area. If the seizure occurs on public land, indicate the official name of the land.

**IV. ESTIMATED LAB CAPACITY**: Estimate the amount the seized lab could have produced, per cooking cycle, based on the amount of precursors, chemicals, and equipment at the lab site. This should be a best estimate, based on on-site observations or intelligence. This field is **mandatory** if the Type of Report has been checked as a Lab Seizure.

**V. LABORATORY STATUS**: A laboratory is considered operational if all the necessary chemicals and apparatus are present, and it is set up so that a chemical synthesis can begin within a short period of time. Anything not considered an operational laboratory should be reported as non-operational. Other choices include Abandoned, Boxed/Dismantled, or Explosion/Fire. Check all that apply. This field is **mandatory** if the Type of Report has been checked as a Lab Seizure.

**VI. LAB MANUFACTURING PROCESS**: Check one. Choose the primary manufacturing process. Check Hydriodic Acid manufacturing or Ephedrine or Pseudoephedrine tablet extraction **ONLY** if the lab was operated solely for this purpose (i.e., the lab being reported was NOT manufacturing methamphetamine). In the OTHER block, indicate any substitute chemicals used.

**VII. LABORATORY EQUIPMENT:** Check the box that most closely describes the type of glassware and apparatus seized. Professional/retail indicates chemistry/research-type equipment. If available, provide information on the manufacturer, seller, etc. Remember, purchaser information is available on some equipment; therefore, the recording of brand name, model number, and serial number is encouraged for possible investigative follow-up.

**VIII. LABORATORY TYPE**: Check the type of drug being manufactured or produced. The **tablet extraction** box indicates the seizure of an extraction-type laboratory only (e.g. pseudoephedrine tablets). Check all boxes that apply.

**IX. SEIZURE/LABORATORY ADDRESS**: List the laboratory's complete address, including county, state, and zip code. (County and state are **mandatory** fields.) In the case of a traffic stop, indicate the location of the stop. If a seizure takes place in a rural area where there are no numbered addresses, put in the closest reference point (i.e., (2 miles West of County Road 220). Latitude/longitude for rural labs with no address are the best alternative.

**X. CHEMIST AND CLEAN-UP PERSONNEL**: This is a **mandatory** field. Check the appropriate box and provide the name of the HAZMAT contractor. Evaluation of Hazmat Contractor is **mandatory** for all DEA reported seizures.

**XI. PERSONS AFFECTED**: Check all boxes that apply. The number of children affected is a **mandatory** field. Total children affected would include children residing (not necessarily present) and any children visiting. (***If anyone was injured or killed at the lab site, provide additional details in the Remarks Section.***)

**XII. WEAPONS/EXPLOSIVES SEIZED**: Type of weapon is considered a handgun, shotgun, rifle, assault rifle, etc. The number indicates how many of the same make and model were seized. Under Description, indicate Make, Model and Caliber of the weapon. If a Booby Trap was encountered, indicate whether it was explosive, chemical or mechanical and any other identifying information.

**XIII. QUANTITY OF ALL DRUGS SEIZED AT LAB SITE**: Check all boxes that apply and provide quantity and unit of measurement. This category includes finished drugs, unfinished drugs, as well as manufactured drugs in solution (e.g. 22 grams of meth; 200 milliliters of meth in solution) and other types of drugs found, but not necessarily manufactured, at the lab site.

**XIV. PRECURSOR/CHEMICAL SOURCE**: Specify precursor and check the box that indicates the source. Manufacturer and distributor information, including lot or identification numbers, should be reported. Additional precursor information should be continued in the Remarks Section.

**XV. PRECURSOR AGENTS/ CATALYSTS/ SOLVENTS/ REAGENTS SEIZED**: Check all known precursors/chemicals used and provide applicable amounts (as indicated by seized containers and chemical analysis). If ephedrine or pseudoephedrine is seized, 'packaging' is a mandatory field. For bulk amounts, use weight amount. For tablets, use pill counts and dosage units (i.e., Pseudoephedrine – "250 Tablets/60 mg"). For blister packs, indicate number of blister packs, tablet count per pack, dosage unit size, and any brand name and lot number information (i.e., "Pseudoephedrine – 20 blister packs, 48 tabs each, 120 mg"). If known, select the source of the ephedrine or pseudoephedrine. Provide manufacturer, brand and lot number information where available. Include amounts of empty containers that are found (e.g., 2 ea empty 11oz Ether cans, etc.) When reporting cans or containers of an item, indicate the capacity/size of the containers. (Use Remarks Section for additional space.)

**XVI. CRIMINAL AFFILIATION**: Check the box for any known affiliation that applies to the subjects of the investigation. If the name of the organization is not known, put 'unknown' in the Organizational Name field.

**XVII. SUSPECT/CRIMINAL BUSINESS/CRIMINAL VEHICLE INFORMATION**: Provide the suspect's full name, DOB and address, including county and zip code. Include any other available identifying information. Provide business name and address and vehicle information if criminally associated. (Use additional sheets as necessary.)

**XVIII. DEA REPORTING ONLY**: Provide the GDEP Identifier, DEA office and case number (if other than reporting office), Special Agent's name and telephone number.

**XIX. REMARKS SECTION**: Please use this section to expand on any answers or for any additional relevant information.

If additional assistance is needed, contact the CLSS Help Desk 1-888-USE-EPIC (Option 7), EPIC Watch at (915) 760-2200 or toll free inside Texas 1-800-351-6047; outside Texas 1-800-527-4062. Completed National Clandestine Laboratory Seizure Reports should be e-mailed to CLSS@EPICMAIL.RISS.NET or faxed to **UNCLASSIFIED (915) 760-2913 or CLASSIFIED (915) 760-2538 or mailed to:**

**El Paso Intelligence Center**
**ATTN: Clan Lab**
**11339 SSG Sims Street**
**El Paso, Texas 79908-8098**

**XX. PAPERWORK REDUCTION ACT NOTICE:** See Title 44 United States Code, Chapter 35. This form enables law enforcement agencies to report information concerning the seizure of clandestine laboratories that manufacture illicit substances. This information will be used by law enforcement agencies to assist in developing effective interdiction strategies and to allocate resources, and to provide valuable information to policy makers concerning the scope and breadth of illicit drug manufacturing operations. Under the Paperwork Reduction Act, a person is not required to respond to a collection of information unless it displays a valid OMB control number. We try to create forms and instructions that are accurate, can be easily understood, and which impose the least possible burden on you to provide us with information. The specific circumstances surrounding the seizure of a clandestine laboratory may make this a bit more difficult at times. The estimated average time to complete and file this form is as follows: (1) 15 minutes for the user to become familiar with the form; (2) 30 minutes to complete the form; and

(3) 15 minutes to file the form electronically or to prepare the form for mailing, for a total estimated time of 60 minutes per form. If you have comments regarding the accuracy of this estimate, or suggestions for making this form simpler, you can write to: Drug Enforcement Administration, El Paso Intelligence Center, 11339 SSG Sims Street, El Paso, TX 79908-8098. Any agency of the United States government may not conduct or sponsor, and a person is not required to respond to a request for collection of information unless it contains an OMB control number. OMB No. 1117-0042

# APPENDIX XIII
# SUGGESTED WORK PLAN FORMAT

## I GENERAL INFORMATION

Name and address of facility

Area Map showing facility location relative to nearby landmarks such as ocean, streams, roads, parks, commercial/industrial areas, etc. Within 114 mile radius of the site, show location of public and private drinking water wells, irrigation wells, and underground injection wells. Indicate map orientation with North directional arrow.

Site map showing details of the following (if known):

- Types and volumes of waste present at site
- Underground tanks and piping locations (or previous locations, if removed)
- Storm drains, sewer and electrical lines
- Septic tanks, cesspools, and leach fields
- Building structures, including locations of demolished structures
- Property boundaries
- Chemical storage, transfer, and holding areas
- Location of areas where current or past commercial industrial activities are or have taken place (e.g. washout areas, sumps, trenches, injection wells, pits, ponds, lagoons, dumping grounds, etc.)

Description of local topography, geology, nearby water bodies, floralfauna, and estimated measured depth to groundwater.

Description of current and past site uses and any commercial/industrial activities which are or have occurred at the site. Identify chemical or petroleum substances and any estimate of quantities released.

Description of population and land use(s) of surrounding area

List and summaries of all existing environmental information pertaining to the facility including results of record search, industrial accidents, environmental assessments, etc.

## II PURPOSE AND SCOPE OF PROPOSED WORK

Discussion of how this proposed work plan is intended to fit in with other phases of environmental work to be performed, or planned for in the future, if any.

Include a discussion of the technical approach used or proposed to be used for this phase of work.

Discussion of any or all of the following purposes for this proposed work plan which may be applicable:

- Record Search
- Preliminary site assessment
- Emergency response and release abatement
- Contaminated soil investigation
- Contaminated soil remediation
- Contaminated groundwater investigation
- Contaminated groundwater remediation
- Soil and/or Groundwater sampling

Discussion of conditions under which this proposed work plan may not be followed.

Description of how the work plan may be modified accordingly.

## III SCHEDULE OF PROPOSED ACTIVITIES

The work plan schedule should include a description of milestone tasks to be completed. Provide dates for start and completion of each task with any interim dates for progress reports. Include a time period for data review and a due date(s) for final report(s). For multiple task work plans, include a diagram, flow chart, or critical path chart to help readers to understand the schedule of work activities planned.

## IV STATEMENT OF INTENDED DATA USAGE

If the proposed work plan includes the procurement of environmental data, define the types of environmental decisions to be made, identify the intended uses of the data (i.e., define the data quality objectives), and design and appropriate data collection program. The data quality objectives dictate the level of detail required in the Field Sampling and Quality Assurance Project Plan which may be integral parts of this proposed work plan. The following are examples of possible uses of environmental data, and any one or combination may be intended uses for a proposed work plan:

- Confirm suspected contaminants or concentration of contaminants
- Qualitatively assess the nature and extent of contamination
- Design subsequent sampling events
- Implement emergency response and release abatement actions
- Compare containment concentrations found with established criteria
- Assess exposure, endangerment, and risks
- Screen or select clean up alternatives
- Use as input to conceptual design of clean up technologies and methods

- Use in documenting residual contaminants, if any, upon completion of response action.

## V. DESCRIPTION OF PROPOSED ACTIVITIES

Give complete descriptions of all major tasks planned. Indicate incremental steps necessary to accomplish each task.

- For record search tasks, identify possible sources for information and how the information will be obtained.
- Potential pathways of contaminant migration preliminary public health and environmental impacts
- Preliminary identification of response action objectives and response action alternatives
- Preliminary site assessment tasks, describe logistics of the site visit, inspection and data gathering protocol, and extent of any environmental measurements to be taken.
- For emergency response and release abatement tasks, describe situations anticipated, equipment and materials needed, and procedures to be followed,
- For soil or groundwater investigative tasks, include (or reference) a Field Sampling Plan and Quality Assurance Project Plan developed to the appropriate level of detail commensurate with the data quality objectives for the sampling event.
- For clean up tasks, identify clean up objectives and remediation technologies and methods to be employed on site and off site. For off site remediation, include a copy, or reference, and Operations manual for the process. Include a clean up plan to monitor and report to the HEER Office the effectiveness of the technology and methods employed.

Data Quality Objectives requiring known, defensible data quality for sound decisions making purposes mandate that an adequate Field Sampling Plan and an adequate Quality Assurance Project Plan be developed and followed.

Data Quality Objectives for tasks such as screening, scoping, or qualitatively assessing a site for contaminants do not necessitate a rigorous Field Sampling Plan or Quality assurance Project Plan.

Provide supporting rational for all data collection tasks. Give five reasons for measuring specific contaminants. Give reasons for measuring contaminants at specific sampling locations. Provide and accounting of costs and key assumptions for determining costs.

## VI DOCUMENTATION AND REPORTING

Observation and details on how each task in the proposed work plan was accomplished should be carefully noted in a daily field log book.

Upon completion of the tasks in the work plan, specify that a data report will be prepared for submittal to the HEER Office which describes the work performed, presents the data findings, gives conclusions, and sets forth recommendations.

To the extent possible, at this point in the response action, specify that appropriate information and reports will be prepared for submittal to the HEER Office.

## VII QUALIFICATION OF ENVIRONMENTAL PERSONNEL

Provide a list of ail persons by name, title, and company affiliation who will be performing the tasks set forth in this proposed work plan.

Provide a description of the duties and responsibilities of each person with respect to the work plan tasks.

Provide the qualifications of each person listed including education, experience and training.

Provide a project organizational diagram of all persons, including consultants and contractors.

Provide the name and telephone number for one person designated as the Project Coordinator responsible for the day-to-day response activities for carrying out this work plan.

# APPENDIX XIV
# SUGGESTED FIELD SAMPLING PLAN FORMAT

## I SITE BACKGROUND

Analyze all existing data and summarize the information here. lnclude a description f the site and surrounding areas and a discussion of known or suspected contaminant sources, transport pathways, and other information about the site. Also include a description of specific data gaps and information about the site. Also include a description of specific data gaps and ways in which this sampling scheme is designed to fill those gaps.

## II SAMPLING OBJECTIVES

Clearly specify the objectives of the sampling effort. Specify the intended uses of the data (Data Quality Objectives). This should be clearly and succinctly stated. Give supporting rationale for the representation of the data to be procured.

## III SAMPLE LOCATION AND FREQUENCY

This section of the Sampling Plan identifies each sample matrix to be collected and the constituents to be analyzed. Use a table to clearly identify the number of samples to be collected along with the appropriate number of replicates and blanks. lnclude a drawing to show the locations of existing or proposed sample points. If applicable, specify frequency of sampling.

## IV SAMPLE DESIGNATION

Establish a sample numbering system for each investigation project. The sample designation should include the sample or well number, the sampling round, the sample matrix (e.g., surface soil, groundwater, soil boring), and the name of the site.

## V. SAMPLING EQUIPMENT AND PROCEDURES

Sampling procedures must be clearly written. Step-by-step instructions for each type of sampling are necessary to enable the field team to gather data that will meet the data quality objectives established. lnclude a list of instruments, and equipment to be used including a description of the material of construction (e.g., Teflon, stainless steel, PVC) for the equipment.

## VI SAMPLE HANDLING AND ANALYSIS

lnclude a table that identifies sample preservation methods, types of sampling containers, shipping requirements, and holding times. Include examples of paperwork and instructions for filling out the paperwork (e.g., traffic reports, chain of custody forms, packaging lists, and sample tags to be filled out for the samples). Include examples and instructions for filling out any other specific documentation that the designated laboratory will require. Provide for proper handling and disposal of wastes generated at the site as a result of the sampling event. Describe site-specific procedures to prevent contamination of clean areas and to comply with existing requirements. Include instructions to clearly document actions taken.

# APPENDIX XV
# SUGGESTED FORMAT FOR A QUALITY ASSURANCE PROJECT PLAN

## I TITLE PAGE

At the bottom of the tile page, provide signature blocks for approval of the Quality Assurance Project Plan (QAPP). If the owner or operator of the project has a designated head of environmental matters, than that person should approve of the QAPP. If the owner or operator has hired an environmental consultant or contractor for the investigative or sampling event, than the consultant's or contractor's project manager and quality assurance manager should approve the QAPP. If a subcontractor is also used, than the approval of the subcontractor's project manager and quality assurance manager should also be obtained. Finally, the director of the designated laboratory should approve the QAPP.

## II TABLE OF CONTENTS

Include the following sections in the Table of Contents:

- Introduction and Project Description
- Project Organization and Responsibilities
- Quality Assurance Objectives for Data Measurements
- Sampling Procedures
- Sampling and Document Custody Procedures
- Calibration Procedure and Frequency
- Sample Preparation and Analytical Procedures
- Data Reduction and Validation
- Internal Quality Control Checks
- Performance and Systems Audits
- Preventative Maintenance
- Data Measurement Assessment Procedures
- Corrective Actions
- Quality Assurance Reports to Management
- List of Appendices

## III INTRODUCTION AND PROJECT DESCRIPTION

The introduction to the project description section should consist of a general paragraph identifying the phase of the work and the general objectives of the investigation. In describing the investigative project, include a description of the location, size and important physical

features of the site, such as ponds, lagoons, streams and roads. Include a drawing showing site locations and layout. Provide a chronological site history including descriptions of the use of the site, complaints by neighbors, construction and environment permits, and chemical usage. Also provide a brief summary of previous investigative or sampling efforts and an overview of the results. Finally, list specific project objectives for this particular phase of data gathering, and identify ways in which the data will be used to address each of the objectives. Identify matrix groups and parameters of interest.

## IV PROJECT ORGANIZATION AND RESPONSIBILITIES

Identify key personnel or organizations that are necessary for each activity during the sampling event. Provide a description of responsibilities for each. Include a table or a chart which shows the organization and line of authority for decisions making. Where specific personnel cannot yet be identified, list the job title and the representative organization charged with that responsibility.

## V QUALITY ASSURANCE OBJECTIVES FOR DATA MEASUREMENT

For individual matrix groups and parameters, implement a multiple party cooperative effort to include the owner operator of the property, the consultant/contractor, subcontractors, and representative of the designated laboratory in order to define what levels of quality are required for the data (Date Quality Objectives). These quality assurance (QA) objectives will be based on a common understanding of the intended use of the data, available laboratory procedures, available resources, and logistical limitations, (if any). Itemize the field blanks and duplicate field sample aliquots to be collected for QA purposes for the matrix groups identified in the project Description.

The selection of analytical methods require a familiarity with regulatory or legal requirements concerning data usage. Provide descriptions of any sample preparation and analytical methods to be used. These may be appended to this QAPP document, If particular standard testing methods are preferred by the HEER Office and those methods are deemed to be appropriate and are planned to be used, then these methods can simply be referenced.

Review the detection limits needed for the project as compared to the detection limits of methods offered by the designated laboratory. Pay special attention to detection limits provided by the laboratory for volatile organic compounds because these limits are often found to be insufficient for the analysis of water for drinking water standards or other requirements.

Establish quantitative limits of the following QA objectives:

- Level of QA effort
- Accuracy of spikes, reference compounds, etc
- Precision
- Method detection limits
- While planning far the sampling event, take into consideration the quality characteristics of completeness, representativeness, and comparability.
- Laboratories should provide data that meet quality control acceptance criteria for
- 90 percent or more of the requested determinations. Identify any sample types, such as control or background locations, that require a higher degree of completeness.

Representativeness of the data is most often thought of in terms of collection of representative samples or selection of representative sample aliquots during laboratory analysis. Comparability is a consideration during the planning stage to avoid having to use data gathered by different organization or among different analytical methods that cannot be reasonably compared because of differences in sampling conditions, sampling procedures, etc.

## VI SAMPLING PROCEDURES

These procedures may be appended to the site specific Sampling Plan. Documentation for field measurements or test procedure for hydro geological investigations should be located in either the Sampling Plan or the "Sample Preparation and Analytical Procedure" section of the QAPP. Provide a description of the sample procedures to be used for each major measurement, including pollutant measurement systems. Where applicable, the following items should be included:

- A description of techniques or guidelines used to select sampling sites
- A description of the specific sampling procedures to be used
- Charts, flow diagrams, or tables delineating sample program operations
- A description of containers, procedures, reagents, etc. used for sample collection, preservation, transport, and storage.
- A discussion of special conditions for the Preparation of sampling equipment and containers to avoid sample contamination
- A description of sample preservation methods
- A discussion of the time considerations for shipping samples promptly to the laboratory (i.e., holding times)
- Examples of the custody or chain of custody procedures and forms
- A description of the forms, notebooks, and procedures to be used to record sample history, sampling conditions, and analysis to be performed

Data quality objectives may be incorporated by reference in this section. Also append any special field operation methods or procedures which may be routinely used.

## VII SAMPLE AND DOCUMENT CUSTODY PROCEDURES

Sample custody is part of any good laboratory of field operation. If sampling data are needed to demonstrate compliance with specific requirements or if the data may be used for legal purposes, then use chain of custody procedures.

The topic of custody may be divided into three basic areas:

- Sample collection
- Laboratory
- Final evidence files

Address all three areas of custody in the QAPP. The owner operator or the environmental consultant contractor may refer to other guidance documents for additional information on this topic, such as EPA's "CLP User's Guide." Include all originals of laboratory reports in the final evidence files. Maintain these files under custody.

A sample or an evidence file is under custody if:

- It is in your possession;
- It is in your view, after being in your possession;
- It was in your possession and you placed it in secure area; and
- It is in a designated secure area.

Provide examples of chain of custody records or forms to be used to record the chain of custody for samples, laboratories, and evidence files.

## VIII CALIBRATION PROCEDURES AND FREQUENCY

Identify calibration procedures and frequency for each parameter measured and include field and laboratory testing. The appropriate standard operating procedures (SOP) can be appended and referenced, or a written description of the calibration procedures to be used must be provided.

## IX SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

For each measurement, either append and reference the applicable analytical SOP or provide a written description of sample preparation and analytical procedures. Standard EPA test methods are preferred, and simple references to them are sufficient.

## X DATA REDUCTION AND VALIDATION

For each measurement, describe the data reduction scheme planned for the collected data, including all equations used to calculate the concentrations or value of the measured parameter. Specify the criteria that will be used to validate the integrity of the data during collection and reporting. For additional information on data validation, refer to EPA's documents entitled, "Functional Guidelines for Evaluating Organic Analysis (EPA 68-01-6699)" or "Functional Guidelines for Evaluating Inorganic Analysis."

## XI. INTERNAL QUALITY CONTROL CHECKS

Identify all specific internal quality control methods to be used. These methods **include the use of replicates, spike samples, split samples, blanks, standards,** and QC samples. Identify the ways in which the quality control information will be used to qualify the data.

## XII. PERFORMANCE AND SYSTEM AUDITS

Describe the internal and external performance and systems audits that will be implemented to monitor the capability and performance of the total measurement system. Additional information on this topic may be found in EPA's "Compendium of Superfund Field Operations Methods" for routine field work.

The systems audits consists of evaluating the components of the measurement systems to determine their proper selection and use. These audits include a careful evaluation of both field and laboratory quality control procedures and are normally performed before or shortly after systems are operational. However, such audits should be performed on a regular schedule over the duration of an investigation or over continuing periods of operation. (Formal laboratory certification programs require onsite systems audit.) After systems are operational and are generating data, performance audits are conducted periodically to determine the accuracy of the total measurement system or its component parts. Include a schedule for conducting performance audits for each measurement parameter.

## XIII PREVENTATIVE MAINTENANCE

Provide a schedule of the major preventative maintenance tasks that will be carried out to minimize downtime of field and laboratory instruments, and equipment. References can be made to owner's manuals for specific field equipment.

## XIV DATA MEASUREMENT ASSESSMENT PROCEDURES

This section describes specific routine procedures which will be used to assess data (i.e., to assess data for precision, accuracy, and completeness). The precision and accuracy of data must be routinely assessed for all environmental monitoring and measurement data. Describe specific procedures to be employed to accomplish this assessment. If enough data are generated, statistical procedures may be used to assess the precision, accuracy, and completeness. If statistical procedures are used, they must be documented.

## XV CORRECTIVE ACTIONS

In the context of quality assurance, corrective actions are procedures that might be implemented with respect to samples that do not meet QA specifications. Corrective action are usually addressed on a case by case basis for a specific investigation. The need for corrective actions is based on predetermined limits of acceptability. Corrective actions may include resampling or reanalysis of samples and recommending an audit of laboratory procedures. Identify persons responsible for initiating these actions, procedures for identifying and documenting corrective action and reporting and follow up procedures.

## XVI QUALITY ASSURANCE REPORTS TO MANAGEMENT

Identify the method to be used to report the performance of measurement systems and data quality. In these reports, include results of performance audits, results of systems audits, and significant QA problems encountered, along with recommended solutions. The final report for each investigation must include a separate QA section that summarizes the data quality information contained in periodic reports.

# APPENDIX XVI
# WIPE SAMPLING PROTOCOLS

## 1.0 INTRODUCTION

This protocol provides for the collection of settled dust samples from hard, relatively smooth, non-porous surfaces using wipe methods. The protocol is not applicable for the collection of settled dust samples from highly textured surfaces, such as brickwork and rough concrete, and soft fibrous surfaces, such as upholstery and carpeting. The protocol is capable of producing samples for either methamphetamine or lead (separate and distinct wipe samples and subsequent analyses), with quantitative results in loading terms (micrograms per 100 square centimeters).

## 2.0 EQUIPMENT AND SUPPLIES

### 2.1 Required Sampling Equipment

- Masking Tape: Used for holding down sampling templates and marking sampling locations.
- Sample Collection Containers: Certified precleaned, 4-ounce, brown amber, wide-mouth jar with Teflon-lined lid.
- Sampling Templates: A sampling template is typically a disposable cardboard cut-out of a 100-$cm^2$ inside area, or a 100-$cm^2$ area demarcated directly on the wall or other surface with masking tape. Reusable plastic, aluminum, or other materials may be used. Usually, this will be a 10- centimeter by 10-centimeter square. A variety of shapes (such as square, rectangle, square U-shaped, rectangle U-shaped, and L) may be used in variable field situations. All templates must have accurately known inside dimensions. Templates should be thin (less than 1/8-inch) and capable of lying flat on a flat surface.
- Measuring Tape or Ruler: Steel or plastic with divisions to 1 centimeter.
- Wipes: Sterile cotton gauze 10 centimeters by 10 centimeters (Johnson & Johnson®, or equivalent).
- Methanol: Reagent grade. Used for wetting methamphetamine sample wipes.
- 10% Nitric Acid: Reagent grade. Used for wetting lead sample wipes. Nitric acid is needed only when the amalgam/P2P methamphetamine method of cooking has been identified.

### 2.2 General Supplies

- Field Notebooks: Bound with individually numbered pages.
- Indelible Ink Marker: Black ink.
- Ink Pens: Black ink.
- Packaging: Bubble wrap for sample, Ziploc® bags for bubble-wrapped samples, clear strapping tape for sealing shipping coolers.

- Plastic Bags: Trash bags with ties.
- Nitrile or Latex Gloves: Powderless (gloves with powder should not be used).
- Shipping Cooler(s): With sufficient gel ice to maintain samples at 4+2°Celsius (40+4° Fahrenheit).
- Optional Forms: Sampling report form and chain-of-custody form.
- Custody Seals: Used to seal custody of individual samples for purposes of legal defensibility.

## 3.0 SAMPLING PROCEDURE

Following is a summary or overview of this procedure:

STEP 1. Select a sampling location. Don a clean pair of gloves.

STEP 2. Mark the sampling location using a template or masking tape that equals 100 cm2. Photograph the sample location (optional). Discard gloves.

STEP 3. Don a clean pair of gloves. Remove gauze wipe from packaging, and wet gauze wipe lightly with either methanol (for methamphetamine sample) or 10% nitric acid (for lead sample). Squeeze off any excess wetting agent. The wipe should not drip during wipe sampling. Fold wipe in half.

STEP 4. Perform first wiping side to side in an “S” motion (see Figure 4-1), covering entire sample area. Apply pressure to the fingertips during wiping.

STEP 5. Turn wipe over. Perform second wiping top to bottom in an “S” motion, covering entire sampling area. Apply pressure to the fingertips during wiping.

STEP 6. Place wipe in brown-amber, 4-ounce sampling jar, and cap with Teflon-lined lid.

STEP 7. Label the sample container with the date, time collected, sample identification, and other pertinent information (total sample size).

STEP 8. Discard gloves in a trash bag.

Please note that it is important to change gloves as instructed because contamination may be transferred from one sample location to another potentially clean sample location. If a composite sample is being collected, repeat Steps 1 through 6 using a new wipe, a new template, and clean gloves. The wipes for the composite sample are placed in a single sample jar and the total sample area is noted on the sample label.

# APPENDIX XVII
# VACUUM SAMPLING PROTOCOLS

## 1.0 INTRODUCTION

This protocol provides for the collection of samples from surfaces using vacuum methods. The protocol is suitable for the collection of samples from hard and highly textured surfaces, such as brickwork and rough concrete, and soft, fibrous surfaces, such as upholstery and carpeting. This protocol can be used to produce samples for methamphetamine or lead. Procedures presented in this protocol are intended to provide a method for collection of samples that cannot be conducted using wipe collection methods.

In addition, these procedures are written to utilize equipment that is readily available and in common use for other environmental sampling applications. Because of the flow dynamics inherent in the vacuum method, results for vacuum samples are not likely to reflect the total contaminants contained within the sampling area. This protocol generally will have a collection bias toward smaller, less dense, particulates.

However, the protocol, if performed as written, will generate particulate data that will be consistent and comparable between operators performing the method. Collecting samples by vacuuming offers the advantages for sampling dusty, non-porous surfaces and porous surfaces such as carpeting, ceiling tiles, ventilation systems filters, and cloth seats. Vacuum samples must be collected using only high-efficiency particulate air (HEPA) vacuum samplers. Vacuum samples are obtained using a Dust Collection Filter Sock (manufactured by Midwest Filtration Company, Fairfield, Ohio, or equivalent) to the inlet nozzle of a HEPA vacuum sampler. Conventional home or industrial vacuum cleaners should not be used for sample collection because these vacuum cleaners can further disperse contamination if filtration is insufficient. HEPA vacuum samples are not appropriate in sample locations where insufficient dust mass is collected.

## 2.0 EQUIPMENT AND SUPPLIES

### 2.1 Required Sampling Equipment

- Vacuum Sampler: HEPA vacuum sampling system configured with a filter sock.
- Filter Sock: 0.8-micrometer, filter sock.
- Masking Tape: Used for holding down sampling templates and marking sampling locations.
- Sampling Templates: 100-square-centimeter ($cm^2$) inside area, reusable aluminum or plastic, or disposable cardboard or plastic template. A variety of shapes (such as square, rectangle, square Ushaped, rectangle U-shaped, and L) may be used for variable field situations. All templates must have accurately known inside dimensions. Templates should be thin (less than 1/8-inch), and be capable of lying flat on a flat surface.
- Sample Collection Container: 50 or 100 milliliter conical or centrifuge tube with Teflon-line lid.
- Secondary Sample Collection Container: Ziploc® plastic bags for holding and transporting the filter cassettes, or socks in sampling containers.

- Measuring Tape or Ruler: Steel or plastic divisions to at least 1 centimeter.

## 2.2 General Supplies

- Field Notebooks: Bound with individually numbered pages.
- Indelible Ink Marker: Black ink.
- Ink Pens: Black ink.
- Packaging: Bubble wrap for sample, Ziploc® bags for bubble wrapped samples, clear strapping tape for sealing shipping coolers.
- Plastic Bags: Trash bags with ties.
- Nitrile or Latex Gloves: Powderless (gloves with powder should not be used).
- Shipping Cooler(s): With sufficient gel ice to maintain samples at 4+2° Celsius (40+4° Fahrenheit).
- Forms: Sampling report form and chain-of-custody form.
- Custody Seals: Used to seal custody of individual samples if desired for legal defensibility.

# 3.0 SAMPLING PROCEDURE

## 3.1 Vacuum-Sampling Procedure

The following procedure assumes that the air-sampling pump has been warmed up, and sufficient flow (<2.5 L/min) verified by the manufacturer, vendor, or via a flow meter or other calibration device. Following is a summary or overview of this procedure:

STEP 1. Select a sampling location. Don a clean pair of gloves.

STEP 2. Mark the sampling location using a template or masking tape that equals 100 $cm^2$. Photograph the sample location (optional). Discard gloves.

STEP 3. Don a clean pair of gloves. Prepare the vacuum and filter (sock or cartridge, depending on the type of vacuum sampler).

STEP 4. Perform the first vacuuming side to side in an “S” motion (see Figure 4-5), covering the entire sample area.

STEP 5. Perform the second vacuuming top to bottom in an “S” motion (see Figure 4-5), covering the entire sample area.

STEP 6. Place cartridge in brown-amber, 4-ounce sampling jar. Cap with Teflon-lined lid, or place sock in conical sampling tube and cap with Teflon-lined lid.

STEP 7. Label the sample container with the date, time collected, sample identification, and other pertinent information (total sample size).

STEP 8. Discard gloves in a trash bag.

Please note that it is important to change gloves as instructed because contamination may be transferred from one sample location to another potentially clean sample location. If a composite sample is being collected, repeat Steps 1 through 8 using a new filter sock, a new template, and clean gloves. The socks for the composite sample are placed in a single sample container and the total sample area is noted on the sample label.

# APPENDIX XVIII
# VOLATILE ORGANIC COMPOUND SAMPLING PROTOCOLS

The following sampling method has been excerpted and revised from the United States Environmental Protection Agency's (EPA's) *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition, Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* (January 1999, EPA/625/R-96/010b).

The method, referred to as *TO-15*, involves the use of a Summa® vacuum canister, which when opened (by simply turning a valve) draws an air sample into the canister for subsequent analysis by the laboratory. While there are other methods to test for volatile organic compounds (VOCs) in air, TO-15 provides lower detection limits and models real conditions more effectively than other methods. In addition, sampling is a simple process, and the physical integrity of the canister prevents damage to, or loss of, the sample.

VOCs exist in many household items, including nail polish remover, some cleaning compounds, oil-based paints, glues and adhesives, and new carpeting. For this reason, VOC sampling should occur:

- After decontamination is complete,
- Before any new carpeting or painting activities, and
- After the residence has been well ventilated (see Section 4.3).

The residence is not ventilated during sampling. The residence should be at room temperature, typically 68° to 74° Fahrenheit. All exterior doors and windows should be closed. The canister is placed in the middle of the room where the former methamphetamine laboratory existed and placed on a table, rather than on the floor. The exact height is not critical, but is intended to approximate the breathing zone of a young child (approximately 3 feet).

In order to obtain a representative sample, a composite or time-weighted average sample is collected. This means that the canister is fitted with a special flow device (e.g., critical orifice), which regulates the flow of the air sample into the canister over a period of several (8 to 12) hours. When the canister is ordered from the laboratory, it must be specified that a time-weighted average sample will be obtained.

There should be a threaded cap, which must be removed from the orifice before sampling. Next, the sampler notes the time and pressure (on the canister gauge) and opens the canister valve. The building, room, and canister are left undisturbed for several hours during the day, or possibly overnight. Afterward, the sampler returns, notes the time and pressure, closes the canister, and replaces the cap. Refer to Section 4.3.1 and Figure 4-6 for additional sampling procedures. An identification tag is attached to the canister. At minimum, the canister serial number, sample identification, location, date, and time of sampling (hour and minutes) are recorded on the tag.

The canister is routinely transported back to the analytical laboratory in a canister-shipping case. The laboratory does most of the work. In preparation for indoor air sample collection with the Summa® canister, the laboratory evacuates the canister to a negative pressure vacuum,

certifies that the canister is clean and free of any contaminants, and leak tested before sample collection in accordance with the technical specifications of the method. Standard laboratory turnaround time is seven to 10 business days. Typical cost is $250 for the canister, flow controller, and analyses. The sampler pays to ship the sample back to the laboratory.

# APPENDIX XIX
# MERCURY SAMPLING PROTOCOLS

## 1.0 INTRODUCTION

This protocol provides for the collection of air samples for mercury analysis.

## 2.0 EQUIPMENT AND SUPPLIES

Mercury vapor sampling requires:

1. Air-monitoring pump and sampling line.
2. Flow calibration device.
3. Sorbent sampling tube.

This equipment is of technical specification. The pump and calibration device can be leased, and sorbent tubes and sampling lines purchased from a vendor.

### 2.1 Required Sampling Equipment

One possible sampling equipment set includes:

- Sampling pump: SKC Series 222 low flow pump kit.
- Calibration kit: DC Lite calibration kit.
- Sorbent tubes: SKC #226-17-1A.

### 2.2 General Supplies

- Field Notebooks: Bound with individually numbered pages.
- Indelible Ink Marker: Black ink.
- Ink Pens: Black ink.
- Packaging: Bubble wrap for sample, Ziploc® bags for bubble-wrapped samples, clear strapping tape for sealing shipping coolers.
- Plastic Bags: Trash bags with ties.
- Nitrile or Latex Gloves: Powderless (gloves with powder should not be used).
- Shipping Cooler(s): With sufficient gel ice to maintain samples at 4+2° Celsius (40+4° Fahrenheit).
- Optional Forms: Sampling report form and chain-of-custody form.
- Custody Seals: Used to seal custody of individual samples for purposes of legal defensibility.

## 3.0 SAMPLING PROCEDURE

Following is a step-by-step summary of this procedure:

STEP 1. Prepare sampling location on table in middle of room.

STEP 2. Don a clean pair of sampling gloves. Break ends of sorbent tube immediately before sampling.

STEP 3. Connect air-monitoring pump to sample line, sorbent tube, and calibration device. Turn pump and calibration device on, and adjust flow device to 0.2 liter per minute. Record the time and exact flow.

STEP 4. Remove flow calibration device, and allow pump with sorbent tube to run for 6 to 8 hours.

STEP 5. Don a clean pair of sampling gloves. Record the exact time, and turn off the pump. Remove sorbent tube, and replace caps. Package tube in Ziploc® bag and bubble wrap in cooler with gel ice for delivery to laboratory at 4+2° Celsius (40+4° Fahrenheit). On the laboratory request form, note the total number of minutes sampled.

STEP 6. At least one blank tube is also sent to the laboratory. For the blank, quickly break off the ends of the tube, and cap immediately. Package tube in Ziploc® bag and bubble wrap in cooler with gel ice for delivery to laboratory at 4+2° Celsius (40+4° Fahrenheit). Name the blank *other room*, and on the sample request form, provide a “dummy” number of minutes.

# APPENDIX XX
# THE NATIONAL CLANDESTINE DRUG LABORATORY CLEANUP PROGRAM (NCLCP) FORM

Clandestine laboratory investigations lead to the seizure of hazardous waste. This material must be disposed of in accordance with standards set by the environmental protection agency (EPA). In addition, occupational safety and health administration (OSHA) regulations specifically delineate the conduct of employees participating in these operations. The code of federal regulations 1910.12 mandates that all law enforcement officers (federal, state, and local) must have completed at least 40 hours of training prior to entering or processing a clandestine laboratory. In view of the dangers posed by clandestine methamphetamine labs, law enforcement supervisors must make every effort to ensure that all personnel participating in these activities have completed this initial training as well as yearly recertification classes.

**PART 1--TO BE COMPLETED BY REQUESTING AGENCY PRIOR TO DISPATCH OF WASTE DISPOSAL COMPANY:**

Agency Name: _____

Departments Representative Certified to Enter Lab Site: _____

Reporting Officer Name/Rank: _____

Phone/Fax Numbers: _____

Location of Suspected Lab: _____

Date of Lab Seizure: _____

**PART 2-TO BE COMPLETED BY DEA PERSONNEL:**

DEA Representative Authorizing Contractor: _____ Phone Number: _____

State/Local Cleanup ID Number: _____ Fax Number: _____

**PART 3--TO BE COMPLETED BY REQUESTING AGENCY WITHIN 24 HOURS OF CLEANUP:**

Name and Phone Number of Contractor Utilized: _____

State/Local Police Case Number: _____

Was a Chemist at Lab Site?: Yes / No

If yes, give name, agency, and phone number: _____

_____

Evaluation of Hazardous Waste Disposal Company (choose one): Satisfactory ☐ Unsatisfactory ☐

Description of Lab Type:

Additional Remarks:

Signature of Reporting Officer: _____ Date of Clean-up: _____

# APPENDIX XXI
# WARNING SIGN POSTING AT CLANDESTINE DRUG LABORATORIES

*A. Warning Sign for Posting at Clandestine Drug Laboratory*

**WARNING WARNING WARNING**

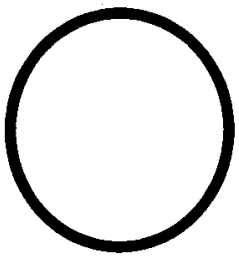
**A clandestine laboratory for manufacture of illegal drugs and/or hazardous chemicals was seized at this location on _____ .**

**DATE**

**Known hazardous chemicals have been disposed pursuant to law.**

**However, there still may be hazardous substances or waste products on this property, either in buildings or in the ground itself. Please exercise caution while on these premises.**

***AGENCY***
***AGENCY ADDRESS***
***AGENCY PHONE NUMBER***



***AGENCY LOGO***

**WARNING WARNING WARNING**

# APPENDIX XXII
# SUGGESTED FORMAT FOR FINAL REPORT

## I COVER PAGE

- Provide facility name and address. If available, provide latitude and longitude coordinates.
- Date report was prepared.
- Name, address and telephone number of person/company preparing the report.

## II TABLE OF CONTENTS

## III EXECUTIVE SUMMARY

A brief summary overview of the important results and findings of the remedial investigation, initial response, field measurements, free product removal, and media specific (soil, groundwater) investigation activities. Conclusions and recommendations for further (if any) work should also be presented.

## IV INTRODUCTION/PURPOSE

Brief Statement of Purpose

## V BACKGROUND

- Site Description - a brief description of the site location and surrounding area. The location of any populations that could be affected by the site.
- Vicinity Map or Sketch -with north arrow, streets, etc.
- A USGS 7.5 minute topographic quadrangle map indicating the location of the site.
- Site Plan(s) drawn to scale showing details of the following:
    - The type and extent of onsite, ground surface cover (i.e., asphalt, concrete, soil, etc)
    - Locations of all products and waste products tanks, storage areas, etc
    - Adjacent streets, buildings, and property lines
    - Utility Conduits
    - Facility Information
    - A brief history of the site ownership operation
    - Results of initial surficial inspection of the area
    - Description of the processes and products used at the site
    - Types of products used and histories of releases -- including estimations of volume, and initial response.

- Previous investigations
- A brief summary of the results of any previous investigations

## VI STUDY AREA INVESTIGATION

This includes field activities associated with site characterization. If technical memorandum were prepared, they may be included in an appendix and summarized in this chapter.

- These may include physical and chemical monitoring of some, but not necessarily all, of the following:
  - Surface Features
  - Contaminants Source lnvestigations
  - Meteorological lnvestigations
  - Surface Water and Sediment lnvestigations
  - Geological lnvestigations
  - Soil Zone lnvestigations
  - Groundwater lnvestigations
  - Human Population Surveys
  - Ecological lnvestigations
- Cross-sectional diagrams showing the specific locations and depth of the sampling.
- Describe the site sampling procedures undertaken to collect and analyze all media.
- Describe or cite sample control procedures followed, including types of sample collection containers used and method of appropriate sample preservation.
- Discuss Chain of Custody.
- Discuss Field Measurements: Instrumentation, Calibration, response, and procedures.
- Present Table of Field Measurement Results keyed to sample locations and the site plan.
- Laboratory Analytical Results: Present a Table of Results with sample ID, location (keyed to site plan) including sample depths, preparation and analysis methods, constituent concentration and method detection limits. All tabulated results should be expressed in parts per million (mg/kg or mg/l).
- Formal Analytical Results should be an appendix to the report. Results must be reported on laboratory letterhead and include the following:
- Date sampled, received (by all parties), extracted, analyzed, and reported.
- Condition of samples upon receipt by laboratory
- Methods of preparation (extraction) and analysis
- Detection Limits
- Concentration of analyte, in ppm

- QA/QC protocol should include:
    - Field and reagent blank
    - Matrix spike and matrix spike duplicate
    - Calibration check standard
    - Surrogate recoveries
    - Signature of analytical testing personnel and the lab director manager
    - A summary of the Data Quality Assessment should be provided for each sampling event.

## VII PHYSICAL CHARACTERISTICS OF THE SITE

This includes results of field activities to determine physical characteristics.

These may include some, but not necessarily all, of the following:

- Surface Features
- Meteorology
- Surface Water Hydrology
- Geology
- Soils
- Hydrogeology
- Demography and Land Use
- Ecology

A site plan identifying the locations of all soil borings and groundwater monitoring wells.

At least two representative cross-sections should be included in the report.
The cross sections should illustrate, at a minimum: fresh, brackish and saltwater elevations; well screen lengths, total depth of penetrations, lithology and or stratigraphy intercepted, including continuity or discontinuity of those lithologies; important structural feature, if present, all surface topography; important natural and cultural locations (ponds, streams, rivers, swamps, highways, buildings, foundations, etc.) and the horizontal and vertical extent of contamination.

A copy of the boring logs and all other pertinent information, such as photos or diagrams of excavations should be included.

Based on literature, maps, and field, test, and core data a representative and accurate classification of the regional and localized hydrology including:

- Known or recorded depth to groundwater
- Representative description of waterlfluid pressure as indicated in water-level (head) contour andlor potentiometric maps. The flow system should show the horizontal

component of flow and any temporal changes in hydraulic gradient due to either manmade or naturally occurring influences.

- The direction, estimated volume, and estimated velocity of groundwater flow.
- The characteristics of the uppermost aquifer, including the nature of the aquifer (i.e., caprock, basal, perched, or dike-confined), interconnections, aquifer use, and salinity or conductivity. If aquifer tests are performed, discussion should include the well location and completion details, test methods used and calculation used.
- Characterization of the surface water bodies within 114 mile of the facility
- Potential area of groundwater recharge and discharge including manmade and natural features.
- A discussion of the available published climatological data for the site area, including monthly average precipitation and seasonal variations of precipitation which could influence contamination fate and migration.

## VIII NATURE AND EXTENT OF CONTAMINATION

Presents the results of the site characterization, both natural chemical components and contaminants in some, but not necessarily all, of the following media:

- Sources (lagoons, sludges, tanks, etc.)
- Soils and Vadose Zone
- Groundwater
- Surface Water and Sediments
- Air

## IX CONTAMINANT FATE AND TRANSPORT

- Potential Routes of Migration
- Contaminant Persistence - If they are applicable, describe estimated persistence in the study area environmental and physical, chemical, and or biological factors of importance for the media of interest.
- Contaminant Migration - Discuss factors affecting contaminant migration for the medial of importance. Discuss modeling methods and results, if applicable.
- The type, magnitude and extent of soil and water contaminants at the facility should be completely characterized. This characterization should include, at a minimum:
    - Complete characterization, in both the horizontal and vertical extent, by media and phase. Including:
        - A summary table of results of all samples of soil and water with sample locations keyed to plan map(s)
        - A plan map(s) illustration the areal extent of contamination by media and phase

- At least two representative cross sections depicting the vertical extent of contamination by media and phase.
- Copies of all laboratory data forms and associated QAfQC documentation as an appendix to the report.

## X RISK ASSESSMENT PROCEDURES

Include the Tier I, 11, or I1 Worksheet with follow up documentation. If EPA RAGS is followed, provide all information required by that process: Exposure Assessment, Toxicity Assessment, and Risk Characterization. Provide any ecological risk evaluation information.

## XI SUMMARY AND CONCLUSIONS

Include a summary of the nature and extent of contamination, fate and transport, and risk assessment. Include any conclusions regarding data limitations and recommendations of future work. Also, recommendations for remedial action objectives.

## XII APPENDICES