Joint Legislative Oversight Committee on Residual Contamination of Drug Properties

[Report]

December 16, 2002

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COMMITTEES:
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VICE CHAIRMAN
APPROPRIATIONS
COUNTIES AND MUNICIPALITIES

APPROPRIATIONS SUBCOMMITTEE
ON EDUCATION/NATURAL
RESOURCES

December 16, 2002

The Honorable Jane D. Hull
Governor, State of Arizona
1700 West Washington
Phoenix, AZ 85007

The Honorable Randall Gnant
President of the Senate
1700 West Washington
Phoenix, AZ 85007

The Honorable James Weiers
Speaker of the House of Representatives
1700 West Washington
Phoenix, AZ 85007

Dear Governor Hull, President Gnant and Speaker Weiers:

The Joint Legislative Oversight Committee on Residual Contamination of Drug Properties is required to review best practices and standards of remediation and forward them to the Board of Technical Registration to adopt in rule by July 31, 2003.

The Committee met on December 16, 2002 to review and formally refer these recommendations to the Board of Technical Registration. Please accept the attached minutes, the proposed best practices and remediation levels, as well as an implementation report given by the Board of Technical Registration as the Committee's annual report of findings and recommendations to be submitted on or before December 15 of each year.

Sincerely,

Carol Somers

Carol Somers, Chair
State Representative

ARIZONA STATE LEGISLATURE

Forty-fifth Legislature – Second Regular Session

JOINT LEGISLATIVE OVERSIGHT COMMITTEE ON RESIDUAL CONTAMINATION OF DRUG PROPERTIES

Minutes of Meeting
Monday, December 16, 2002
House Hearing Room 3 -- 10:00 a.m.

(Tape 1, Side A)

Mrs. Somers called the meeting to order at 10:09 a.m. and attendance was noted by the secretary.

Members Present

Senator Mitchell	JoAnn Garcia	Alton Theile
Representative Sedillo	Raymond Glos	Jace Zack
Albert Brown	Donna Neill	Representative Somers,
John Butler	Donald Schneidmiller	Chairman
Ron Dalrymple	Steven Springborn	

Members Absent

Senator Guenther	Representative Voss	Craig Sanford
Senator Martin	Barbara Catrillo	

Speakers Present

Melissa Taylor, Majority Research Analyst, House Financial Institutions and Insurance Committee
Dr. Jeffrey Burgess, Associate Professor, University of Arizona College of Public Health
Patrick Cunningham, representing the Arizona Attorney General's Office
Ron Dalrymple, Executive Director, Board of Technical Registration (BTR)

Introductions - Opening Remarks

Mrs. Somers stated this committee was established by H.B. 2595. This committee will make recommendations on standards and process.

The members of the committee introduced themselves.

Designation of Chairperson

Mrs. Somers stated most committees of this type have the chairperson appointed by the Speaker of the House and the President of the Senate. However, this was not done with this particular

committee. A chairperson will need to be appointed for this meeting and a new chairperson will need to be appointed next year.

Mr. Springborn moved that Representative Somers serve as the chairperson of this meeting. The motion carried by a voice vote.

Overview of H.B. 2595 and committee duties

Chairman Somers said the idea for this legislation was not new. A large number of people have had concerns about creating some standards as to how locations that served as methamphetamine labs were going to be cleaned up and who is responsible for paying for it. A mechanism for payment needs to be created that minimally impacts state funds. Improvements will need to be made to this legislation. It is meant to serve as a push-off point for dialogue.

Melissa Taylor, Majority Research Analyst, House Financial Institutions and Insurance Committee, reviewed H.B. 2595 and the duties of the committee (Attachment 1).

In response to inquiry by Mr. Sedillo, Ms. Taylor stated there is no intergovernmental agreement for certification of remediation specialists. This legislation put into statute the requirement of the owner or landlord to clean up a residually contaminated drug property. Chairman Somers added this legislation states that before a contaminated property can be rented or sold the owner or landlord needs to clean it up or notify the buyer/renter that the property is contaminated. Cost of the cleanup could be subtracted from the selling price or rent. The committee will decide as to what level the property needs to be cleaned. Once the property has been cleaned to specification, the need to notify future buyers/renters is eliminated. The purpose of this legislation is not to leave a stigma on the property or the owner for the life of the property.

Mr. Sedillo commented that contamination of drug properties in Mexico can affect Arizona. Chairman Somers stated that while that is beyond the scope of this committee, it may be something that needs to be researched.

Mr. Theile said determining whether or not drugs have been manufactured on a property is a complicated business. The presence of certain chemicals at a property may not indicate a lab was present. It is easy to remove the container the chemicals are stored in but determining how serious the contamination is tends to be difficult. This committee can determine what levels of contamination need what kind of cleanup. Keeping the focus of the committee narrow would be helpful.

Mr. Springborn asked if there is a timeline by which the cleanup needs to be completed. Ms. Taylor replied the bill specifies a timeline upon discovery of a drug lab whereby the law enforcement officer who discovers the lab has two days to notify the owner of the property in writing that the law enforcement action took place. Within five days of the discovery, a certified letter needs to be sent to the owner and the county health department notifying them of the date of action. There is no date by which the owner has to clean the site, other than they cannot sell or rent the site out until it has been cleaned.

Mr. Springborn said he is concerned that once a site has been designated as contaminated and a physical barrier is not in place preventing entry, there will be a problem with transients entering

the building or children playing in the building. Liability will also be increased if someone injures themselves while at the contaminated site. Public safety personnel may not be aware of the potential hazards upon entering the structure.

Chairman Somers said law enforcement officials were supportive of this legislation to give them the authority to at least put a sign on the property that the site is contaminated as well as making it a Class 6 felony to enter a contaminated site.

Dr. Jeffrey Burgess, Associate Professor, University of Arizona College of Public Health, stated that after the bulk chemicals have been removed, there is not a high risk for contamination by the general public just walking in and out of the building. It is best to prevent re-entry, however, being in the building for short periods of time would not be hazardous.

Patrick Cunningham, representing the Arizona Attorney General's Office, remarked he worked on the original bill and can address liability issues. The law enforcement officer is required to provide notice not only to the owner of the contaminated property and to the address determined by the county assessor, but to the county health department and the local fire department as well. A notice must be placed on the site that has detailed warning measures. Local governments cannot be responsible parties under the Superfund law. Local government will also not be liable for costs or damages incurred as a result of taking action under this section unless there is gross negligence or intentional misconduct.

Senator Mitchell opined a great deal of these labs are located in rural areas that may not be covered by a municipality.

Presentation on remediation practices and standards for recommendation to the Board of Technical Registration

Dr. Burgess said he is an emergency physician with a toxicology fellowship and an occupational medicine fellowship. He is triple certified in all those fields. When he first started researching methamphetamine labs in Washington State, he found there was no information about adverse health effects on law enforcement officers who worked in and around these drug labs. He has also received many phone calls from families who live in homes that were drug labs at one point wanting to know if there were any potential problems they should look out for.

Dr. Burgess said it is difficult to determine exactly what chemicals are used in the manufacturing of methamphetamines. He reviewed a chart on chemical-specific remediation levels (Attachment 2, Page 6). If you remediate for methamphetamine, many of the other chemicals used in the production of methamphetamine will also be remediated. It is important to note that lead and mercury should only be tested for if there is reason to suspect they were used in the production of methamphetamine. These may be present at the site and have nothing to do with drug production.

Mr. Thiele opined language may need to be added to the legislation stating that the police report needs to be consulted in determining what chemicals may be present at a drug lab site.

Mr. Dalrymple said in Oregon and in Washington, two states whose remediation practices were closely observed, there is a requirement whereby the police report is consulted. This could be written into the rules so a contractor would look at the report prior to starting the cleanup.

In response to inquiry by Mr. Brown, Dr. Burgess replied it is his understanding that photo-ionization detectors can detect particles down to one part per million. The standard he suggests for remediation of lead is from the U.S. Department of Housing.

Chairman Somers stated the entire body of work that Dr. Burgess presented is a response to a request for proposals from the Arizona Attorney General's Office. This work goes beyond the scope of what the committee can do. The committee will be able to use parts of the work.

Mr. Dalrymple stated the Board of Technical Registration will be concentrating on the criteria for contractor certification. It is important that the program that is implemented in Arizona is compatible with other states. There may be approximately 30 firms in Arizona that will be able to remediate these properties.

(Tape1, Side B)

Chairman Somers said she did not foresee the state having to provide the training for the people that will be cleaning the property.

Mr. Dalrymple stated the legislation does not cover this training, but training may need to be provided in order to implement Dr. Burgess' recommendations.

Chairman Somers said the only action the committee is taking today is adopting remediation practices and standards. The committee can amend the practices prior to presentation to the Board of Technical Registration.

In response to inquiry by Mr. Springborn, Dr. Burgess replied that younger children tend to get closer to a carpet and have more hand to mouth contact with a carpet. Therefore, if there are chemicals embedded in the carpet, there is a greater risk of exposure to children.

Report on implementation of licensing and regulation of remediation companies

Ron Dalrymple, Executive Director, Board of Technical Registration (BTR), stated the legislation does not go into a great deal of detail on the certification program, which was intentional. The skeleton for the program has been laid out and research has been done as to how other states handle their certification programs. The BTR was charged with implementing a standard and rules committee within the BTR to assist with the endeavor.

He said he attended the three day training program in Oregon to get an idea as to what training was being provided. There has to be some evaluation of the contractors qualifications. The basic training is the 40-hour Hazardous Waste Operations and Emergency Response Standard (Hazwoper) course. Additional information will be provided as this course is fairly basic. Other determinations need to be made in the certification process, including whether or not there will be an exam at the end of the training and what type of examination will be used. He feels if Dr. Burgess' program is implemented, Arizona will be a leader in this type of remediation.

Mr. Springborn asked if the leach field that is usually associated with a septic tank could be a hazard. Dr. Burgess replied outdoor contamination is not as big a concern as indoor contamination as there is dissipation into the atmosphere outdoors. He has not done any research on effects of contamination in a leach field.

Mr. Cunningham advised that all of the contractors will have to characterize their waste stream. For the items like septic waste that are classified as hazardous waste, they will be disposed of at a hazardous waste site rather than at a local landfill.

Mr. Thiele moved, seconded by Ms. Neill, that the Committee adopt the remediation practices and standards recommended by Dr. Burgess. The motion carried.

Mr. Thiele suggested electing the new chairperson for the committee at this time. Ms. Taylor said the language of the bill is specific in that the appointment of a chairman is done on an annual basis and, therefore, cannot occur until the next meeting held in 2003.

Without objection, the meeting adjourned at 11:54 a.m.

Andrea Allen, Committee Secretary
December 18, 2002

(Original minutes, attachments and tape on file in the Office of the Chief Clerk.)

In response to inquiry by Chairman Somers, Dr. Burgess replied some kind of training and certification is needed because not all contractors and their staff will have the same level of training or education. Mr. Thiele added that most of the contractors he has worked with are certified in gross contamination cleanup only, which has no standards.

Chairman Somers said the language in the bill says "the committee shall review the best practices and standards and forward them to the BTR. The BTR shall adopt these practices and standards by rule not later than..." It would seem to her there is a lot of latitude in what the committee can forward to the BTR.

Mr. Dalrymple commented that whatever this committee forwards to the board, it will be, in essence, a mandate to the board. If the suggestions require the development of an exam as well as the certification of contractors and workers, costs will be increased.

In response to inquiry by Mr. Dalrymple, Chairman Somers said the bill refers to using Occupational Safety and Health Administration (OSHA) standards for certification of remediation supervisors.

Mr. Brown stated he would recommend using a fee-for-service model. A marketing survey could be performed to determine how many firms would be interested in being certified in this type of remediation.

Senator Mitchell said he would also recommend not hesitating to approach the Legislature for additional funds. It is important that this be done correctly.

In response to inquiry by Mr. Springborn, Mr. Cunningham added the state will probably not face any kind of liability by not certifying inspectors. This is a public policy choice.

Adoption of remediation practices and standards for recommendation to the Board of Technical Registration

Mr. Brown said that within the remediation practices and standards, there needs to be a reference to the Environmental Protection Agency (EPA) asbestos abatement policy. He would be willing to work with Mr. Dalrymple on the specific policies. Mr. Butler added OSHA requirements would apply to the contractor.

Mr. Brown stated septic tanks would be a prime place for contamination. Specific language on how to deal with septic tanks should be added to the practices and standards.

Senator Mitchell commented that even though the contents of a septic tank may not be a hazard to occupants of the house, the tank will eventually need to be emptied, which could cause a problem for the people emptying the tank.

Mr. Brown said there are also groundwater impacts from septic tanks.

Dr. Burgess concurred with Senator Mitchell that the occupants of a home with a septic tank would not be affected as much as the people who empty the tank.

Community and Environmental Health
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February 11, 2002

Patrick J. Cunningham
Special Litigation Counsel
Office of the Attorney General
1275 W. Washington
Phoenix, AZ 85007

Dear Mr. Cunningham:

Please find enclosed the final deliverables for Phases I and II of the project. We will continue working on the preparation of Phases III and IV for public comment as previously agreed. Please contact me for any questions you might have or to receive electronic copies.

Sincerely,

Jefferey L. Burgess, MD, MPH

Encl: 1) Public comments received on the draft documents
2) Illicit Methamphetamine and Amphetamine Laboratories
3) Hazardous Chemicals in Illicit Methamphetamine and Amphetamine Laboratories
4) Recommendation of Remediation/Work Practices and Clean-up Levels
5) Recommendation for Post-Remediation Testing/Clearance Levels

Call for Public Comment

Literature Review of Health Effects from Exposure to Methamphetamine Laboratories and Recommendation of Remediation/Work Practices and Clean Up Levels

The following documents were produced by the Division of Community and Environmental Health of The University of Arizona College of Public Health under contract with the Office of the Attorney General, State of Arizona. This research project focuses on the following questions:

- What is the risk and health impact to children, adults, and law enforcement personnel from exposure to the manufacture of methamphetamine and amphetamine in residential units including rental units, hotels and motels?

- What is the risk and health impact to children, adults, and law enforcement personnel from exposure to the residual contamination left behind from the manufacture of methamphetamine and amphetamine?

The project consists of four phases. Only the first two phases, 1) the Literature Review of Health Effects from Exposure to Methamphetamine Laboratories and 2) Recommendation of Remediation/Work Practices and Clean up Levels will be presented at this time. **Public comment will be accepted until January 18th.**

At a later time the final two phases, 3) Recommendation of Work Practices to Maintain Officer Safety and 4) Standards for Certification of Remediation Specialist will be placed on this website for public comment.

The term residential in this project means three categories of residential property: 1) owner occupied and rental housing including homes, duplexes, and fourplexes; 2) rental multihousing units like apartments, condominiums and town houses with central sewer and HVAC systems; and 3) rental housing like hotels and motels with central sewer and HVAC systems.

Literature Review of Health Effects from Exposure to Methamphetamine Laboratories

This phase of the project entails a written summary and listing of each document found during a review of the professional literature concerning adverse health effects resulting from exposure to methamphetamine or amphetamine laboratories. Each document was reviewed and a summary of reported health effects listed for: 1) persons making the drugs; 2) family and children present during manufacture; and 3) law enforcement personnel entering the lab to seize it. A brief critique of each document is also provided.

In addition, a description of the contaminants of concern considered most dangerous to the human health of the three populations listed above is also provided.

Recommendation of Remediation/Work Practices and Clean Up Levels

This phase of the project includes a written recommendation stating standards of practice for remediation of air handling systems, plumbing in the housing units and common sewers, wall surfaces and draperies, smooth surfaces, flooring surfaces including carpet, wood and concrete, ceiling surfaces, and contaminated concrete and wallboard which compose floors, walls, and ceilings, as well as provisions for when soil sampling is recommended.

A written recommendation stating appropriate remediation levels for the clean up of residual contamination found in residential property resulting from the manufacture of methamphetamine and amphetamine is also provided.

Public Comments

Please provide your comments (including your name, organization, and return email) prior to January 18th. All comments received will be reviewed and revisions made in the final documents delivered to the Office of the Attorney General, State of Arizona, based on these comments.

STATE OF ARIZONA

OFFICE OF THE ATTORNEY GENERAL

JANET NAPOLITANO
ATTORNEY GENERAL

1275 WEST WASHINGTON, PHOENIX, AZ. 85007-2926

MAIN PHONE: (602) 542-8500
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January 18, 2002

Dr. Jeffrey L. Burgess
Community and Environmental Health Practice & Policy
College of Public Health
The University of Arizona
1435 North Freemont
Tucson, Arizona 85719-4197

Re: Meth Cleanup Bill

Dear Dr. Burgess:

The Attorney General's Office has the following comments on your Recommendation of Remediation/Work Practices and Cleanup Levels Report dated January 8, 2002.

1. Please clarify whether porous materials outside the immediate area of the manufacturing process shall be removed.

2. Please clarify whether stained nonporous surfaces, such as bathtubs and toilets, can be power-washed and sealed rather than removed.

3. The numeric cleanup levels should be set forth in a separate section from the work practices.

4. The work practices should be set forth in a separate section from the numeric cleanup levels.

Thank you for your assistance in this matter and if you have any questions, please do not hesitate to contact me.

Very truly yours,

Thomas A. Cunningham for

Patrick J. Cunningham
Special Litigation Counsel

Twhite@SWWHD.WA.GOV

1 – Regarding your definition of residence. I think the Washington WAC uses wider terminology, ie "property". This includes RVs where meth cooks often live and work.

Twhite@SWWHD.WA.GOV

2 – Our WAC also covers "Storage" of meth lab chemicals, which gives us local health official some wide authority, but is useful when a site is used for only one stage of meth manufacturing, but is widely stained/contaminated. Just a couple thoughts for now if you have not already considered them. Will forward your page to the contractor I mentioned, and to Troy Corbin, co-owner, and drug lab trainer, Marine & Environmental Testing, Portland, OR.

Heather McArthur: City of Phoenix Police Dept.
Heather.l.mcarthur@phoenix.gov – I can't see any of the information – when will the link be working?

Darcy Brondt : Maricopa County Environmental Health
dbrondt@mail.maricopa.gov – I am curious how many labs in the state have the ability to test for all of the items listed in the clean-up procedures and where the labs are located.

Richard R. Rosky

Richard R. Rosky: Tri-State Precursor Committee Coordinator
Rrraz566@Yahoo.com – I support your efforts and have always believed that residual contamination left behind by methaphetamine labs is a serious public health risk, that up until now has not been dealt with. It is important to conduct the proper research to support legislation that will address the problem and establish a protocol for cleanup and certification procedure for reoccupation of a previously contaminated site. In my opinion the potential hazards of residual contamination from a meth lab are just as dangerous as lead based paint in a residential structure.

Phase I

Illicit Methamphetamine and Amphetamine Laboratories

Introduction

This review of adverse health effects associated with methamphetamine and amphetamine laboratories was limited to professional literature, including medical literature and governmental and non-governmental agency documents and websites. Newspaper articles were not included. The majority of professional literature available on exposure to methamphetamine laboratories describes potential health effects based on the known toxicity of a number of chemicals commonly found in the laboratories. Reports on actual adverse health effects experienced by individuals or groups of people are limited. The greatest amount of information is available on law enforcement personnel entering labs to seize them, followed by reports on injuries to the people making methamphetamine, also known as 'cooks'. Information on actual health effects in family and children present during manufacture is extremely limited. The great majority of information is on methamphetamine laboratories, and very little information was found on amphetamine laboratories. In the future additional information should become available to provide a more complete picture of the adverse health effects resulting from exposure to these illicit laboratories. However, as the precursor chemicals used to manufacture illicit drugs change over time, the type and extent of health effects may also change.

This review is organized into sections. The first section consists of original reports presenting documented instances of adverse health effects. The second section consists of reviews and guidelines that include information on potential adverse health effects based on known chemical toxicity and secondary reports of injuries. This second section is divided into three subsections containing documents produced by non-governmental entities, local and state agencies, and federal organizations.

Original reports

Allcott JV, Barnhart RA, Mooney LA. Acute Lead Poisoning in Two Users of Illicit Methamphetamine. *JAMA.* 1987;258:510-1.

This article describes a case of lead poisoning in two users of methamphetamine. Acute lead poisoning is a potential risk to those using illegally produced methamphetamine. Lead poisoning is difficult to diagnose since its symptoms may be similar to those of hepatitis, kidney disease, and inflammation of the brain. Two cases have been reported of acute lead poisoning in methamphetamine users, and both were hospitalized with various symptoms including abnormal liver functions, basophilic stippling of the red blood cells, and elevated blood lead levels. Lead is sometimes used in the production of methamphetamine; and, if manufacturing is not done properly, residual lead may remain in the finished product in high levels.

This article illustrates the possibility of residual contamination of the drug product, methamphetamine, with lead from improper manufacturing. While these two cases of lead poisoning illustrate the effects on the user, lead released during methamphetamine manufacture may remain as a residue, which could

potentially harm those living in the laboratory during manufacture and in those occupying improperly decontaminated laboratories.

Willers-Russo LJ. Three Fatalities Involving Phosphine Gas, Produced as a Result of Methamphetamine Manufacturing. *J Foren Sci.* 1999;44:647-652.

This article describes three fatalities in persons making methamphetamine. Phosphine gas can be produced during the hydriodic acid/red phosphorus method of methamphetamine production. In the presence of water, phosphorous acid does not decompose to phosphine gas, but above 180° C, superheating occurs and aqueous components are driven off, resulting in phosphine gas production. Symptoms of phosphine inhalation include headache, fatigue, weakness, thirst, chest pain, shortness of breath, nausea, vomiting, convulsions, and coma. Chronic exposure can lead to gastrointestinal and visual-speech disorders as well as chromosomal damage. In 1996, three individuals were found dead in a motel room from exposure to phosphine gas formed during manufacture of methamphetamine. Deputies who responded did not use personal protective equipment, including respirators. Fortunately, they were not in the room long enough to experience any health effects.

This article provides an example of the potential effects of exposure to phosphine produced during methamphetamine production. Harmful levels and characteristics of phosphine are discussed. Also stressed in this article is the need for personal protective equipment and training of personnel responding to drug laboratory incidents. Types of respiratory protection are also described.

(Names withheld) ...Hydrogen Sulfide Fatality. *Journal of the Clandestine Laboratory Investigating Chemists Association.* 1997;7:5.

This article describes a death in a person making methamphetamine due to exposure to hydrogen sulfide, which apparently was mistakenly used instead of hydrogen chloride. Upon investigation of the site, a cylinder labeled hydrogen sulfide was freely discharging. The deceased was wearing an air-purifying respirator.

This is a case report illustrating the potential for chemicals not usually associated with illicit drug manufacture to be present in methamphetamine laboratories. In this case an apparent mistake by the cook led to his demise.

(Names withheld) Flash Fire Injures Two Suspects in Las Vegas. *Journal of the Clandestine Laboratory Investigating Chemists Association.* 1996;6:14.

This article describes the case of two persons likely involved in making methamphetamine who were treated for severe skin burns. Glassware and chemicals were found in the trailer where the fire occurred and methamphetamine was found in solution and as a powder.

This article illustrates the flammable nature of the solvents used for methamphetamine manufacture and the resultant fire and explosion hazard.

Anonymous. Public Health Consequences among First Responders to Emergency Events Associated with Illicit Methamphetamine Laboratories-Selected States, 1996-1999. *Morbidity and Mortality Weekly Report.* November 17, 2000. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4945a1.htm.

This article reviews health effects in first responders, including law enforcement personnel responding to methamphetamine laboratories. Many of the ingredients used in production of methamphetamine are hazardous substances that can potentially cause harm to first responders. In 1996, an explosion occurred in a Washington methamphetamine laboratory, injuring an occupant. Three hospital employees, unaware of the cause of the burns to their patient, suffered from nausea and vomiting after treating the person. Three emergency medical technicians (EMTs) and two police officers exposed to smoke from the fire had eye and respiratory irritation. In 1999 an Oregon firefighter suffered chemical burns after exposure to hydrochloric acid and ephedrine during a fire in a home where methamphetamine manufacturing material was later found. Also in 1999, in Iowa, three police officers had to be decontaminated after reporting respiratory irritation from anhydrous ammonia and ether emissions during a raid. Of 112 reported methamphetamine events reported to Hazardous Substances Emergency Events Surveillance System, 59 resulted in injuries. Of first responders, police officers had the greatest number of injuries followed by EMTs and firefighters.

This report gives examples of harm to first responders responding to events associated with methamphetamine laboratories. Included are statistics on type of first responder injured, specific injury, substances involved, and use of personal protective equipment (PPE). A great many of those injured did not use PPE, showing that injury could very likely have been prevented in many cases.

Burgess JL, Kovalchick DF, Siegel EM, Hysong TA, McCurdy SA. Medical Surveillance of Clandestine Drug Lab Investigators. *J Occup Environ Med.* 2002;44:in press.

Law enforcement officers investigating clandestine laboratories may be at risk of exposure to toxic chemicals. This study of drug laboratory investigators showed an increased decline in forced expiratory volume, a lung function test, in those not using respiratory protection. Most acute symptoms are related to investigations of active laboratories even with the use of cartridge respirators, indicating that self-contained breathing apparatus (SCBA) may be more appropriate for use during assessment and processing (removal and sampling phase) of the laboratory.

This article deals with law enforcement officers investigating clandestine laboratories. Since there is a more rapid decline in pulmonary function when respiratory protection is not worn, it is recommended that respiratory protection in the form of SCBA be used in active laboratories.

Burgess JL, Barnhart S, Checkoway H. Investigating Clandestine Drug Laboratories: Adverse Medical Effects in Law Enforcement Personnel. *Am J Indust Med.* 1996;30:488-494.

This article describes acute health effects of methamphetamine laboratory exposure in law enforcement personnel. A study was conducted among law enforcement chemists and clandestine laboratory

investigation team members to gather information on the health effects of clandestine laboratories on law enforcement personnel. Most of the injuries occurred in laboratories with leaks, spills, fires, explosions, or uncontrolled reactions, and most involved exposure through inhalation. Symptoms included headache, dizziness, nosebleed, burns, chest pain, lung damage, irritation, nausea, abdominal pain, and collapse. Most injuries occurred in cases where respiratory protection was not used. Statistics from the study indicate that self-contained breathing apparatus (SCBA) should be used during assessment and processing in clandestine laboratories and in cases involving fire, explosion, leaks, spills, or uncontrolled reactions.

This article provides statistics from a study of law enforcement chemists and clandestine laboratory investigation team members who developed illness associated clandestine laboratory investigation. Results of the study indicate a need for more protective equipment and training among those involved in investigation of illegal drug laboratories. No respiratory protection was used in most reported cases of injury, although inhalation was the most common route of exposure.

Burgess JL. Phosphine Exposure from a Methamphetamine Laboratory Investigation. *J Toxicol Clin Toxicol.* 2001;39:165-168.

This article describes the health effects of a law enforcement officer's exposure to phosphine gas in a methamphetamine laboratory. Law enforcement officers investigating clandestine laboratories may be exposed to acid gases, solvents, caustics, and other toxic materials. Methamphetamine production may produce phosphine gas. This gas is reported as a possible cause of death in "cooks" who manufacture methamphetamine, and may cause delayed pulmonary toxicity in exposed individuals. A forensic specialist involved in investigation of a clandestine laboratory was exposed to phosphine for 20-30 minutes. She was not wearing respiratory protection, and the laboratory had previously been ventilated. She developed dizziness, dry cough, headache, and diarrhea. An initial medical examination done at an emergency department was normal. However, 4 days after the incident, a pulmonary examination revealed bilateral rhonchi (abnormal breath sounds). Nine months later, respiratory symptoms were still present upon exertion despite treatment with steroids.

This article provides information that demonstrates the possible consequences to law enforcement personnel from exposure to the toxins produced in a methamphetamine laboratory. An example of a forensic specialist exposed to phosphine gas is cited in order to show the possible risks that may be involved and the need for personal safety equipment.

Burgess JL. Hospital Evacuations Due to Hazardous Materials Incidents. *Am J Emerg Med.* 1999;17:51-52.

This article describes one case of emergency department evacuation resulting from an individual with burns believed to be from a methamphetamine laboratory explosion. A man was seen in an emergency department for burns that he reported were caused by battery acid. It was determined after contacting the fire department that the man was probably a "cook" harmed in a methamphetamine lab fire. Several staff members at the hospital were decontaminated by showering. Four of the staff members reported symptoms. Two of the staff reported that symptoms resolved within 24 hours.

This article discusses hospital case studies involving hazardous materials exposures. Of the twelve cases cited, one involved exposure of hospital staff by a man who was a "cook" at a methamphetamine lab.

(Names withheld) ...Phosphine Gas Detected in Pressure Cookers; Chemist Exposed. *Journal of the Clandestine Laboratory Investigating Chemists Association.* 2000;10:6.

This article describes a case of poisoning by phosphine gas in a law enforcement officer investigating a methamphetamine laboratory. The phosphine gas was released from a jar near a pressure cooker being used to heat reaction mixtures of red phosphorus, iodine, and pseudoephedrine. The phosphine gas concentration 5-10 minutes after opening the jar was 1 ppm. The investigator was wearing an air-purifying respirator. The investigator noticed a garlic taste, developed a brief headache, then 4-5 hours later became nauseated which persisted for several days.

This article demonstrates the risk to law enforcement officers investigating methamphetamine laboratories. This investigator developed illness despite the use of an air-purifying respirator.

Brown MJ. *Child Endangerment and Environmental Health Hazards Caused by Clandestine Methamphetamine Laboratories.* Excerpts published at Clandestine Laboratory Investigators Association Annual Meeting, August 1996.

This report thoroughly describes actual and potential health problems in children associated with methamphetamine laboratories. Urine testing of children found in methamphetamine labs revealed methamphetamine in 5 (35%) of 14 individuals. Four (10%) of 41 children removed from non-lab sites when a parent was arrested for methamphetamine use tested positive for methamphetamine in their urine. This report also describes a situation where five children in a home where methamphetamine was being manufactured developed liver damage. Furthermore, specific health risks to children such as the potential for ingestion of dangerous chemicals and the high risk of fire and explosion are described.

This report contains some of the only published information on adverse health effects in children following exposure to methamphetamine laboratories. It provides a thorough description of health hazards to children in this setting.

Reviews and Guidelines

Non-governmental entities

Burgess, JL. Methamphetamine Labs Community Risks and Public Health Response. *Washington Public Health.* Volume 15, Fall 1997.
http://depts.washington.edu/sphcm/wph97/methlab.html.

This review article provides information on persons making methamphetamine, children present during manufacture, and law enforcement personnel entering the lab to seize it. In one case, a man was treated at a hospital emergency department for burns, which he stated were from a car fire. The local fire department later advised the hospital staff that the man may have been burned in an explosion at a methamphetamine lab. Hospital staff complained of symptoms such as headache, vomiting, nausea, and burning eyes and throat. The "cooks" are most likely to be affected by exposure to chemicals and explosions or fires. Children living in the labs are at risk of inhaling, ingesting, or absorbing chemical through their skin. Their symptoms may include respiratory problems, mucous membrane irritation, nausea, and headaches. Law enforcement personnel involved in an investigation most commonly have symptoms such as headache, respiratory problems, mucous membrane irritation, and skin irritation. Persons occupying a residence once used as a lab may complain of throat irritation, respiratory difficulties and headache. Chemicals such as mercury, lead, and methamphetamine may remain in the residence in small amounts, causing health problems. Risks from contamination very depending on chemicals used, quantity manufactured, and ventilation.

This article describes a case report and provides a broad overview of the risks to members of the community from methamphetamine laboratories. Not only the manufactures and members of the family can be affected, but also people coming in contact with the manufacturing area both during operation and in months or years following operation. Those treating contaminated manufacturers of the drugs can be harmed as well as law enforcement personnel involved in investigation of the operation.

Burgess JL, Chandler D. Clandestine Drug Laboratories. In: Greenberg MI, Hamilton RJ, Phillips SD (eds.) *Occupational, Industrial, and Environmental Toxicology*. 2nd edition (in press).

This chapter provides information on persons making methamphetamine, family and children present during manufacture, and law enforcement personnel entering the lab to seize it. Active laboratories are the greatest risk because of increased likelihood of exposure to chemicals and their byproducts as well as the potential for fire, explosion, and out-of-control reactions. A large variety of chemicals and various methods may be used in the manufacture of the drugs, making it difficult to predict the possible hazards of a particular laboratory. The amount of contamination present in a lab depends on the method used, the level of ventilation, and cleanliness of the "cook." Health effects depend on the chemical process, duration of exposure, personal protective equipment used, and sensitivity to chemicals. In addition, explosives and chemical "booby-traps" may be present. Children living in the drug labs are at risk of ingesting the chemicals as well as inhalation or skin absorption. These children may have elevated liver function tests and/or positive methamphetamine drug screens.

This chapter gives a thorough outline of potential chemical hazards related to clandestine drug laboratories. Included is a summary of various processes used in the manufacture of methamphetamine and resulting chemicals of concern. Descriptions of adverse health effects, potential victims, and a recommended patient medical evaluation plan are included. Also listed is a table of hazardous chemicals that may be encountered, their exposure limits, and potential harmful effects.

Burton, BT. Heavy Metal and Organic Contaminants Associated with Illicit Methamphetamine Production. *NIDA Research Monograph.* 1991;115:47-59.

This article discusses the hazards posed by heavy metal contamination of methamphetamine. Illicit drug manufacture may result in toxic contaminants due to processing errors from lack of skill and knowledge of the manufacturer. Unintended reaction by-products and residuals may be produced, resulting in serious health effects. Shortcuts, inadequate filtering, and solvent extraction may result in contamination of the product with lead or other toxins. Fourteen cases of acute lead poisoning have been reported in users of illegally produced methamphetamine.

This monograph uses the example of acute lead poisoning in users of methamphetamine to demonstrate how illegal drugs are often manufactured improperly, resulting in contamination of the final product. Manufacturers of these drugs are usually unskilled and have little knowledge of chemical processes. The result is shortcuts and improper methods, which result in contamination of both the laboratory and the drug product with heavy metals and organic compounds. The history and production methods are discussed, but there is no mention of the effects on individuals other than the users of contaminated drugs.

Frank, RS. The Clandestine Drug Laboratory Situation in the United States. *J Forensic Sci.* 1983;28:18-31.

This article reviews synthetic techniques for the manufacture of methamphetamine. Forensic scientists involved in the investigation of clandestine drug laboratories must be aware of the various methods used in synthesis, safety in handling the chemicals, knowledge of the hazards involved in different reactions, and the necessity to demonstrate that a particular drug is being synthesized. Investigators and forensic chemists must work as a team to coordinate activities before the seizure, activities during the seizure, laboratory examination of evidence, and court testimony.

This article points out the need for forensic chemists to be aware of the processes and chemicals used in the various manufacturing processes at clandestine laboratories. Various methods of production are outlined.

Goss JF. Meth Labs. *J Emerg Med Services.* 1998;23:50-56.

This article focuses on the potential health hazards of methamphetamine laboratories to first responders. A methamphetamine laboratory can be found almost anywhere, from a nice home to an ice chest stored in the trunk of a car, posing a risk to the public and law enforcement. Law enforcement officers have found that firearms are encountered in about 75% of methamphetamine laboratories, booby traps in about 45%, and violence against emergency personnel is a problem in about 55% of cases. Emergency responders should be aware of the fact that the laboratories may contain corrosive, toxic, flammable, and explosive materials. Responders should be prepared for exposure to poisonous gases such as phosphine which can be fatal if inhaled. In addition to protecting themselves, rescue personnel should evacuate bystanders and occupants, and all persons exposed must

be decontaminated and assessed for burns and damage from inhalation. Rescuers entering methamphetamine laboratories should use self-contained breathing apparatus and protective clothing.

This article stresses the need for emergency personnel responding to a possible clandestine laboratory to know the various health and safety risks that may be encountered by themselves, to those in the laboratories, and to bystanders. Statistics are included on the hazards of booby traps, firearms, and violence. Understanding the hazards of methamphetamine laboratories could be essential in protecting the health and life of responders.

Gunn JW, Johnson DW, Butler WP. Clandestine Drug Laboratories. *J Forensic Sci.* 1970;15:51-64.

This article provides a general review of the chemical hazards present in illicit drug laboratories. Clandestine drug laboratories vary greatly from well-equipped sophisticated operations to limited production facilities set up in bathrooms, warehouses, and garages. Persons involved in legitimate research, teaching, or chemical analyses of depressant or stimulant drugs are permitted to possess and manufacture these drugs for that purpose. Thus, knowledge of production methods is readily available to others who use this knowledge for illegal manufacture. The many hazardous chemicals used for illicit drug synthesis pose a real danger to those responsible for seizure of the laboratories. One agent had a corrosive material thrown in his face during a raid. Due to the toxic materials and highly flammable solvents that may be encountered, a chemist should be involved in assisting agents during a laboratory seizure.

This article describes the great variation in laboratories from the sophisticated to the very crude. Also included is information concerning penalties for possession and sale, various ways manufacturers obtain their "recipes", and precursors of various drugs. The need for agents involved in seizure of the laboratory to seek the assistance of a chemist knowledgeable in toxic chemicals is mentioned.

Irvine GD, Chin L. The Environmental Impact and Adverse Health Effects of the Clandestine Manufacture of Methamphetamine. *NIDA Research Monograph.* 1991;115:33-46.

This article reviews the potential adverse effects of exposure to the production of methamphetamine, including effects in methamphetamine users due to product contamination. Since 1987, more than 80 percent of clandestine laboratories that have been seized are methamphetamine laboratories, and their numbers are increasing. Seventy-six percent of all the laboratories seized were found in California, Texas, and Oregon. Improper storage or disposal of chemicals and equipment could lead to spills, fire, explosion, and environmental contamination with a resulting danger to others. Solvents dumped onto the ground or into sewers or septic systems may contaminate surface water and well water, while other chemicals may leave harmful residues on walls, carpets, drapes, and furniture. Booby traps may be placed, presenting a serious danger to intruders or law enforcement officers. Chemical exposure is a major risk to anyone exposed through inhalation or skin or eye contact with hazardous chemicals. Former laboratories must be properly decontaminated to prevent risk to those reoccupying the site or those in the immediate vicinity. Where decontamination is not feasible, demolition of the property may be necessary.

This article gives a good overview of the various populations affected by the clandestine laboratories. It also outlines the various health and safety risks that may be encountered along with a list of chemicals and by-products associated with methamphetamine production and routes of exposure of toxic chemicals used in its production.

Koch Crime Institute. *Cleaning up Former Methamphetamine Labs.* www.kci.org/meth_info/meth_cleanup.htm.

This website briefly describes the potential adverse health effect of exposure to methamphetamine laboratories prior to presenting clean-up guidelines. Acute exposures of chemicals used in methamphetamine laboratories may cause severe health hazards to law enforcement officers entering an illegal drug lab. Health hazards may include lung damage and burns. Chronic exposure to residual contaminants may also harm those reoccupying the contaminated building. A great number of hazardous chemicals may remain including solvents, metals, iodine, and phosphorus. Volatile solvents may cause nose and throat irritation, dizziness, headaches, nausea, vomiting, and confusion. Acids and bases may cause burns and eye damage, while metals may result in anemia, respiratory irritation, birth defects, and kidney damage.

This article includes guidelines for cleanup used by Missouri Department of Health. One helpful suggestion made in this article is that prospective homebuyers may be able to verify with the local health department if a property was used as a former methamphetamine laboratory. In Oregon, possible hazards are included on the property title.

Skeers VM. Illegal Methamphetamine Drug Laboratories: A New Challenge for Environmental Health Professionals. *J Environ Health*. 1992;55:6-10.

This article reviews the potential health effects of exposure to chemicals within methamphetamine laboratories. It describes criminal hazards, chemical hazards, and acute and chronic health effects. The article also describes the role of environmental health in the coordinated response to methamphetamine laboratories.

This article is intended as a review of methamphetamine laboratories for the environmental health professional.

Local and State Governmental Organizations

Houston Fire Department Continuing Education. *Clandestine Drug Labs.* (accessed 12/2001). www.hfd.ci.houston.tx.us/departments/ce/2001/February/Feb01CE.htm.

This website briefly describes the hazards of a number of chemicals found in clandestine drug laboratories. A growing problem to fire fighters is hazards related to methamphetamine drug laboratories. In 1999, there were 6,835 methamphetamine laboratory seizures and 26 amphetamine laboratory seizures. Of the 6,861 incidents involving illegal drug laboratories, 877 children were

present at the sites, there were 101 explosions, 64 fires, and 80 explosives or booby traps were found. Laboratory sites included motor homes, RVs, apartments, vans, basements, tractor-trailers, and rental storage facilities. Different methods and chemicals may be used in the manufacture of methamphetamine. Toxic emissions from phosphine gas, hydriodic acid, hydrochloric acid, and phosphoric acid may cause chemical burns and permanent respiratory damage in cases of prolonged exposure or nausea in short-term exposure. Waste products from the manufacture of illegal drugs are often illegally dumped, causing contamination of soil and groundwater. Other considerations to be taken by fire fighters are booby traps and attack dogs. Traps include trip wires to set off alarms, explosives, or toxic chemical devices, light switches, refrigerators, or other appliances wired to explosive devices, and large nails or spikes protruding out of buried planks.

This article, a continuing education pamphlet for fire fighters, stresses the potential dangers faced by those responding to clandestine drug laboratories. Methods of production are discussed, with a list of chemicals and their hazards.

Illinois Department of Health, Division of Environmental Health. *Methamphetamine Laboratory and Clean-Up.* December 2000.
http://www.idph.state.il.us/envhealth/factsheets/meth-labs.htm.

This fact sheet provides general information on methamphetamine laboratories, and does not detail effects specific to each of our three population groups. Symptoms found in people exposed to methamphetamine residues are similar to those found in methamphetamine users. Volatile organic compounds used in the manufacture of methamphetamine may cause other symptoms such as nose and throat irritation, headache, dizziness, nausea, vomiting, confusion, and breathing difficulties. Acids and bases can cause burning of the skin and mucous membranes and severe eye damage. Metals and salts used in the production can cause such health effects as respiratory irritation, anemia, kidney damage, decreased mental function, and birth defects. The severity depends on the chemicals used, amount of chemical to which a person is exposed, length of exposure, and health of the person exposed. Residues remain in such porous materials as carpet, wood, fabric, and ceiling tile. Contaminants can also be spread to other areas of the building through ventilation systems and to the soil or groundwater through illegal dumping.

This fact sheet provides a brief summary of the health effects of methamphetamine and chemicals used in their production. Harmful residues from precursor chemicals and final products may contaminate porous materials in the building and harm those with secondary contact.

Kansas Department of Health and Environment. *Cleaning up Former Methamphetamine Labs.*
http://www.kdhe.state.ks.us/methlabs/cleanup.html.

This website, based on the Missouri Department of Health guidelines, briefly describes potential health effects of exposure to methamphetamine laboratories as an introduction to suggested clean-up guidelines. Humans and pets can be harmed by contaminants released during the methamphetamine cooking process. Health effects include headaches, nausea, dizziness, skin and eye irritation and burns. There is also a possibility of severe health problems such as lung damage and chemical burns. First

responders are at risk of short-term exposure. Children and adults reoccupying former drug laboratories are at risk of developing problems from long-term exposure. Exposure to residual chemicals can cause symptoms similar to those seen in users including increased heart rate, high blood pressure, and central nervous system injury. In sufficient quantities, volatile organic compounds can cause vomiting, dizziness, nausea, confusion, and breathing difficulties. Acids and bases may cause burns and eye damage.

This article outlines harmful effects from exposure to chemicals used in the methamphetamine lab and the effects from residues that may be left if not properly cleaned and decontaminated. This article suggests that professional, trained companies provide the safest option for clean up, but also outlines to property owners how they can go about cleaning up the methamphetamine laboratory. A recommendation is given for use of gloves, long sleeves, and eye protection during clean up, but no mention is made of the need for respiratory protection and disposal of contaminated clothing. The statement, "The property owner is responsible for cleaning the property," may lead to risky clean up by individuals who are not aware of the harmful effects relating to specific residual toxic chemicals or the proper use of personal protective equipment.

Minnesota Department of Health. *Health and Safety Issues Related to Clandestine Drug Labs.* http://www.demstate.mn.us/methlab/brochure.html.

This website briefly describes potential health effects of exposure to methamphetamine laboratories in persons making methamphetamine as well as family and children present during manufacture, with a greater focus on children. Health hazards from exposure to chemicals in methamphetamine labs vary depending on the lab process and chemicals present, the amount of chemical used, the length of exposure, and the health of the person exposed. Dangers range from fire and explosion to inhalation, ingestion, and absorption of chemicals through the skin. An acute exposure may cause shortness of breath, cough, dizziness, irritation, burns and possibly death. Acute exposure usually occurs during or immediately after manufacture. Less severe exposure may occur in those who enter the lab after discovery of the lab and before clean up. Symptoms include headache, nausea, fatigue, and dizziness. Chronic exposure may affect those who reoccupy a contaminated structure. Symptoms of chronic exposure include liver and kidney damage, neurological problems, and risk of cancer. Children, because of their immature organ and immune systems and behaviors such as crawling and hands in mouths, may be more susceptible to adverse health effects. Drug-abusing parents also often neglect their children.

This article lists harmful chemicals used in the manufacture of methamphetamine and their effects on "cooks" and children living in the drug labs. A list of agencies involved in clean up and a listing of decontamination methods are included. A description of suspicious odors and clues is given to help the layperson recognize and report a possible methamphetamine laboratory.

Missouri Department of Health. *Cleaning up Former Methamphetamine Labs, Guidelines.* http://www.health.state.mo.us/ResourceMaterial/meth.pdf

This website briefly describes potential health effects of exposure to methamphetamine laboratories as an introduction to suggested clean-up guidelines. Contaminants in methamphetamine laboratories can cause health problems including respiratory difficulties, skin and eye irritation, headaches, nausea, and dizziness. Short-term exposures also have the potential to cause lung damage and skin burns.

This article outlines harmful effects from exposure to chemicals used in the methamphetamine lab and suggests that professional, trained companies provide the safest approach for clean up, but also outlines to property owners how they can go about cleaning up the methamphetamine laboratory. A recommendation is given for airing out the property and contamination removal and disposal.

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

This review article focuses on health effects of methamphetamine in children, based on published studies of methamphetamine use rather than exposure in laboratories, in order to set remediation standards. Occupants, especially children can suffer from residual chemicals left from production of illegal drugs. Infants and children raised in these areas are most susceptible to harmful effects due to physiologic reasons such as their rapid growth, incomplete development, and rapid metabolism as well as behaviors such as crawling on floors and placing their hands and various articles in their mouths. Residues left from vapors produced in cooking of the chemicals can linger on sheetrock, carpet, and other materials long after laboratory activities cease. If not properly decontaminated, resulting residues may result in long-term exposure to harmful substances. Substances such as lead and mercury are sometimes used in production of illegal drugs, and their residues may also remain on carpets and other surfaces. Contamination from these metals is especially toxic to infants and small children, causing potential brain damage and other neurological effects.

This document deals with guidelines for cleanup of clandestine drug laboratories in an attempt to develop standards for reoccupation, which will protect occupants, especially children, from residual chemicals. Included is a description of the effects of methamphetamine, hazards to infants and children, and recommended standards for clean up of methamphetamine, mercury, lead, and volatile organic chemicals.

Salt Lake City Health Department. *Standard Operating Procedures and Best Management Practices for Decontamination of and Sampling at Chemically Contaminated Properties (SOP)*. January 3, 2000. www.slvhealth.org/html/eh/html/chemprop.html.

This document briefly reviews the potential health consequences of methamphetamine laboratories in the introduction to proposed decontamination procedures. "Cooks" in drug laboratories are exposed to toxic materials from all routes of exposure, including ingestion and injection of the drug, inhalation of vapors, and absorption into the skin. Children living in this environment, especially those in contact with the floor, are likely to be exposed to hazardous materials by ingestion, inhalation, or skin absorption. Inhalation or absorption of corrosives may cause shortness of breath, cough, chest pains, and burns. Solvent exposure could cause intoxication, dizziness, nausea, and lack of coordination. Accidental ingestion of chemical is a possibility in children. The lab presents dangers to those entering

the site. There is also a significant risk of fire or explosion from solvents used in the manufacture of these drugs. Other health risks include toxic gases created during the processing of the drug and released during chemical spills. Another hazard is "booby traps" that may have been set. Tripwires may be set to drop sodium cyanide into acid when a door is opened. Dangerous hydrogen cyanide gas would result. Decontamination workers must be aware of the hazards and symptoms related to acute exposure from anticipated chemicals. Proper personal protective equipment, including a self-contained breathing apparatus should be worn.

This article summarizes the health risks related to operation of an illegal drug laboratory as well as the risks to decontamination crews and others re-entering the area. Included is information on site assessment and a creating a decontamination plan. Also listed are necessary qualifications and training requirements for contractors involved in decontamination.

Seattle and King County Public Health Departments. *Environmental Health Hazard Meth Lab Cleanup.* Sept. 2001.
www.metroke.gov/health/scripts/methlab.cfm.

This website briefly covers the health risks of exposure to methamphetamine laboratories and addresses the public health response to these sites. Exposure to chemicals used in the production of illegal drugs can affect both producers of the drugs and others. Various explosives, solvents, metals, salts, and corrosives along with by-products and compounds formed in the manufacturing of the drugs can all be potentially harmful. Labs may be set up in homes, apartments, garages, cars, storage sheds, campgrounds and other locations where contaminants may remain on carpets, floors, walls, drains, and in ventilation systems. For each pound of methamphetamine produced, five or six pounds of hazardous waste are generated. Dumping down drains or on the ground may contaminate soil, groundwater and septic systems.

This article briefly outlines the various locations and materials that may be contaminated by methamphetamine laboratories and illegal dumping. King County Health Department's role and responsibilities in informing the public of such hazards and overseeing decontamination is the focus of the article.

State of California Governor's Office of Criminal Justice Planning. *The Medical Evaluation (Chapter 8) in: Multi-Agency Partnerships: Linking Drugs with Child Endangerment.* Second Edition, May 1999.

This chapter describes the potential health effects in children living in methamphetamine laboratories. Children living in this setting may be exposed to toxic chemicals and other dangers. Drugs and chemicals are sometimes stored in unlabeled or inappropriately labeled food containers, sometimes in refrigerators. Children may inadvertently drink the contents. These children are often poorly supervised and may experiment with drugs used by parents. In some cases, the children may be involved in processing the drug with exposure to fumes, and injury from fire, explosion, electrocution, and other accidents. The result may be neurological injury, trauma, physical injury, or death. Children are often more susceptible to toxic substances including mercury, lead and other heavy metals because

of their physical development. They may be exposed to secondary contamination from bedding, clothing, or furniture. Parents may be reluctant to seek medical attention for their children because of a fear of being arrested, lack of transportation or money, or being unaware
of any problems while under the influence of drugs.

This chapter deals with the potential dangers to children inhabiting illicit drug labs. A list of possible symptoms to help in evaluation and treatment of drug-exposed children is included. Also listed are chemicals with which these children may come in to contact during the processing of illegal drugs.

Wisconsin Department of Health and Human Services. *Cleaning up Hazardous Chemicals at Methamphetamine Laboratories.* 4/2000.
www.dhfs.state.wi.us/.

This website briefly describes potential health effects of exposure to methamphetamine laboratories in the introduction to suggested clean-up guidelines. "Cooking" to produce methamphetamine causes formation of chemicals that can contaminate a property. Materials such as carpeting, wallboard, ceiling tile furniture or drapery may absorb these contaminants. Residues may also enter a heating or ventilation system and spread to other areas of the building. Dumping can contaminate soil or groundwater. Anyone entering a former methamphetamine laboratory should use extreme caution and wear appropriate personal protective equipment. Exposure to residual chemicals can cause health risks depending on the quantity and nature of the chemicals present, the length of exposure and the health of the persons exposed. Volatile organic chemicals can cause headache, irritation, nausea, vomiting and confusion. Acids and bases can cause burns and eye damage. Metals and salts may cause anemia, respiratory irritation, and kidney damage. Exposure to residues of methamphetamine may also cause symptoms similar to those experienced by methamphetamine users including high energy, rapid speech, depression, delusions, and violent behavior.

This document serves as a guide for cleaning up former methamphetamine laboratories. It outlines the hazards involved in contact with residual chemicals and steps for decontamination and removal. Use of personal protective equipment is discussed to some extent; but since cleanup guidelines are given to property owners doing the cleanup themselves, they may be unaware of the proper use of respirators and disposal of contaminated and hazardous materials.

Federal Organizations

Joint Federal Task Force: Drug Enforcement Administration, Environmental Protection Agency, United States Coast Guard. *Guidelines for the Cleanup of Clandestine Drug Laboratories.* U.S. Department of Commerce, National Technical Information Service, Springfield, VA. March 1990.

This document reviews potential adverse health effects as an introduction to recommended clean-up guidelines. Both acute and chronic health risks face those involved in cleanup and seizure of clandestine drug labs, those living and working in surrounding areas, and those involved in manufacture of the drugs. Raw chemicals and by-products are disposed of by dumping down drains or outdoors, which can contaminate soil and groundwater and potentially affect a large number of people.

Those later occupying a building formerly used as a drug lab may be at risk of long-term exposure to residual contaminants. Chemicals may also be stored at locations such as rental lockers, with a potential for fire or explosion. Law enforcement officers investigating illicit drug laboratories are at a risk of exposure to solvents, reagents, drug products, by-products, fire, and explosion. They should receive training in health and safety risks and personal protection.

This comprehensive guideline is intended to assist state and local agencies in development and implementation of clandestine laboratory programs. It provides recommended procedures on cleanup and disposal of hazardous materials. Also included are safety guidelines for four levels of protection that may be needed, depending on the hazards presented by a particular clandestine drug laboratory. Included are lists of hazardous materials that may be encountered, suggestions for a safety training program, and examples of letters of notification and report forms.

The National Methamphetamine Drug Conference. Office of National Drug Control Policy. *Clandestine Labs: Protecting the Environment and Community.* (accessed 12/2001). www.whitehousedrugpolicy.gov/publications/drugfact/methconf/appen-b4.html.

This website reviews information on health effects of exposures to methamphetamine laboratories. The number of methamphetamine laboratories has grown along with the number of explosions and fatalities. In one case, in 1995, a child was burned to death after a fire in a home where methamphetamine was being cooked on the kitchen stove. The mother did not allow a neighbor to help rescue the child because of concern that the neighbor would discover the lab. Thirty-five percent of children removed from drug labs test positive for methamphetamine, and many are reported to have bruises, abrasions, and sporadic bald spots. The "cooks," their families, and children are at additional risk from the toxic effects of the chemicals used at the sites. Law enforcement officers are also at risk from the strong chemicals and the actual drugs. A lab located in a small, poorly ventilated motel had three fatalities when chemicals were overheated and poisonous phosphine gas released.

This article details possible safety and health hazards found in methamphetamine laboratories. Specific cases are cited as examples of the dangers posed by exposure to chemicals used in these labs. Statistics from California include number of lab seizures, costs of training and cleanup, and cost of waste identification and disposal.

Royal Canadian Mounted Police Occupational Health Section. *Chemical Threats to Police Officers From Clandestine Drug Labs. March 1996*

This booklet reviews the potential adverse health effects of chemicals found in clandestine laboratories. It describes each chemical in a succinct and thorough manner, including sections on synonyms, appearance, acute effects, effects on eyes and skin, inhalation effects, ingestion effects, chronic effects, carcinogenicity, and incompatibilities. It also covers appropriate personal protective equipment for each chemical.

This useful booklet contains extensive information in a compact form, and provides the reader with specific information on individual chemicals.

United States Department of Justice, Bureau of Justice Assistance. *Developing a Strategy for a Multiagency Response to Clandestine Drug Laboratories*. Washington, D.C. June 1993, Reprinted September 1995.

This monograph reviews the toxicity and potential health effects of chemicals present in methamphetamine laboratories and presents a multi-agency response strategy. Law enforcement officers may develop lasting disabilities from chemical reagents, illicit drugs, and drug precursors found in clandestine laboratories. Inhalation of toxic chemicals can cause cough, shortness of breath, chest pain, dizziness, nausea, and other symptoms depending on the type of toxic substance. Other chemicals are absorbed through the skin and may cause burns, cough, chest pains, or damage to the kidney, liver, spleen, reproductive system, and other organs. Ingested chemicals from residues on hands, food, or drinks may also cause damage to the mouth, stomach, or intestines. A risk of "booby traps" exists. In addition to the hazards of known chemicals, combinations of chemicals can produce additional toxic effects. Others who may potentially be affected by toxic materials from clandestine laboratories include "cooks" at the laboratories, fire/HAZMAT teams, neighbors, residents of buildings that were former laboratories, and cleanup contractors.

This monogram advocates that each state or locality create a multidisciplinary strategy planning team to deal with the problems associated with clandestine drug laboratories. A strategy plan should be developed with each participating agency having set roles and responsibilities. The agencies would work together to establish procedures for safe entry, seizure, cleanup, and training. Information is included for establishing such a program and selection and training of necessary personnel. Included is a listing of agencies that may be contacted for additional information.

United States Department of Justice. *Hazards of D-Methamphetamine Production: Baseline Assessment*. June 1995.
www.usdoj.gov/ndic/publications/hazards_of_d_methamphetamine_production/hazards_of_5/5/98

This website reviews the hazards of chemicals used in methamphetamine manufacture. Methamphetamine production using red phosphorus and hydriodic acid can release toxic gases and exposure may result in respiratory damage, chemical burns or even death. Red phosphorus conversion to yellow phosphorus can result in fires and explosions and remains a flammability hazard for years when discarded as a waste. Health hazards exist for manufacturers, civilians, and law enforcement personnel involved in seizure of the laboratories. Hotel rooms are sometimes used as temporary production sites and contamination of innocent people may result when a centralized air ventilation system moves harmful vapors or smoke between rooms. When wastes from clandestine laboratories are illegally dumped, soil may have to be removed or decontaminated to prevent contamination of the surrounding area or chemical fire. Costs of clean up vary greatly, but may be as high as hundreds of thousands of dollars.

This article summarizes the dangers from chemicals used in the manufacture of methamphetamine, especially d-methamphetamine. Examples of common waste products and potential damage resulting

from dumping of waste are described. The high cost of cleanup to taxpayers, property owners, environmental protection agencies, and law enforcement is stressed.

Hazardous Chemicals in Illicit Methamphetamine and Amphetamine Laboratories

Many of the hazards associated with Clandestine laboratories originate from the ingredients used and the by-products produced. For persons making drugs, and family and children present during manufacture, the most dangerous chemicals include solvents, due to their volatility and risk of fire and explosion, corrosive agents including acids and sodium hydroxide, and reaction byproducts such as phosphine gas. For manufacture of methamphetamine using the Nazi process, ammonia and water-reactive metals such as sodium and lithium are extreme hazards. Lead and mercury were formerly important contaminants with older "meth" manufacture but are less prevalent in current labs. Release of these products and toxic mixtures can harm the "cooks," their families and friends, first responders (law enforcement personnel, paramedics, emergency medical technicians, fire fighters, and hospital employees), those responsible for cleanup, and individuals reoccupying improperly decontaminated areas. Chemicals with low volatility would be expected to pose the greatest exposure hazard from residual contamination. Due to their continuing brain development and special behaviors (such as crawling on the floor and placing objects in their mouths) children may be at a greater health risk from exposure to chemicals in methamphetamine laboratories.

For the following table, vapor pressure is given at 20°C (68°F) unless otherwise specified. All odor thresholds are from the AIHA unless otherwise indicated. PEL = Occupational Safety and Health Administration (OSHA) Permissible Exposure Level; TLV = American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value, TWA = Time Weighted Average, STEL = Short-Term (15 minute) Exposure Limit, C = Ceiling Limit (level not to be exceeded); IDLH = National Institute for Occupational Safety and Health (NIOSH) Immediately Dangerous to Life and Health concentration.

Acetic Acid (Glacial) (CAS 64-19-7)
Form: Coloress liquid, solid below 62°F, sour, vinegar odor
Use: Reagent used in the manufacture of phenyl-2-propanone (P2P) for methamphetamine and amphetamine
Physical properties: Boiling point 118°C (244°F), vapor density 2.1, vapor pressure 11mmHg
Exposure limits: TLV-TWA 10 ppm, STEL 15 ppm, IDLH 50 ppm
Hazards: Corrosive and strong irritant. Vapors cause eye irritation. Exposure to high concentration may cause inflammation of the airway, accumulation of fluid in the lungs, severe burns, blurred vision, ulcers of the eyes and permanent eye damage. Chronic exposure may cause irritation of the nose, throat, and airway, irritation of the eyes, and reproductive problems. Flammable when moderately heated.
Potential Risks: Acetic acid, which is used in the manufacture of both amphetamine and methamphetamine, is a health risk to all exposed individuals, especially children. Hazards result from skin or eye contact with this acid, inhalation of vapors, or fire due to its flammability.

Acetic anhydride (CAS 108-24-7)
Form: Liquid, colorless, strong vinegar-like odor
Use: Reagent in P2P synthesis
Physical properties: Boiling point 139°C (282°F), vapor pressure 4 mmHg, vapor density 3.5, odor threshold 0.4 ppm
Exposure limits: PEL 5 ppm, IDLH 200 ppm
Hazards: Corrosive and irritant. Vapors are irritating to eyes, mucous membranes and skin. Exposure to high concentration can lead to ulcerations of the nasal mucosa and in some cases bronchospasm. The liquid and vapor can severely damage the eye. This is characterized by immediate burning followed by corneal and conjunctival edema several hours later and in severe cases corneal opacification with loss of vision. Skin contact may cause skin to redden and subsequently turn white and wrinkled, with moderate pain. The appearance of skin burns may be delayed .
Potential Risks: This reagent used in the synthesis of P2P is a corrosive, causing skin burns. Its vapors can lead to eye damage, making it a health risk to individuals exposed during the manufacturing process and cleanup.

Acetone (CAS 67-64-1)
Form: Colorless liquid, sweet fragrant odor

Use: Solvent used in methamphetamine production
Physical properties: Boiling point 56°C (133°F), vapor pressure 180 mmHg, vapor density not given
Exposure limits: TLV-TWA 500 ppm, IDLH 2500 ppm
Hazards: Irritating to the eyes and skin. Vapors may be irritating, causing irritation of the throat, airways, and lung. Prolonged exposure to high concentrations may lead to coughing, blurred vision, fatigue, tremors, convulsions, stupor, bizarre behavior, coma, and death. Alcohol and other chemicals may increase toxic effects. Flammable or explosive when mixed with air at room temperature. May explode when exposed to heat or fire.
Potential Risks: This solvent, which is used in the production of methamphetamine is dangerous primarily because of its flammability and its potential to explode when exposed to heat. At high concentrations it is toxic and potentially lethal. It is a health risk to all individuals exposed during the manufacturing process and those responding to a laboratory fire.

Ammonia (CAS 7664-41-7)
Form: Gas (liquid under pressure), colorless, pungent odor
Use: Reagent in methamphetamine synthesis, Nazi method. Used as liquid for reaction since sodium metal is water reactive.
Physical properties: Boiling point -33.4°C (-28.1°F), vapor density 0.6, odor threshold 17 ppm
Exposure limits: TLV-TWA 25 ppm, STEL 35 ppm, IDLH 300 ppm
Hazards: Corrosive and irritant. Reacts with moisture in the mucosal surfaces (eyes, skin and respiratory tract) to produce ammonium hydroxide. Exposure to vapors at high concentrations can result in burns to eyes, nose, pharynx, and larynx. Eye exposure may result in conjunctivitis, lacrimation, corneal irritation, and temporary or permanent blindness. Respiratory exposure may result in bronchospasm, laryngitis, tracheitis, wheezing, dyspnea, and chest pain. Exposure may also result in pulmonary edema and chemical pneumonitis. Skin exposure to concentrated vapors or liquid can lead to deep penetrating burns.
Potential Risks: Ammonia is a gas used in methamphetamine synthesis. Its vapors are a health risk to all individuals in the vicinity during the manufacturing process.

Benzaldehyde (CAS 100-52-7)
Form: Liquid, colorless, bitter almond odor
Use: Precursor for amphetamine or P2P synthesis, with nitroethane
Physical properties: Boiling point 176°C (354°F), vapor pressure 1 mmHg at 26.2°C (79.2°F), vapor density 3.7, odor threshold 0.04 ppm
Exposure limits: None
Hazards: Mild irritant to the lungs, a narcotic at moderate doses, and a convulsant at higher doses. It may cause contact dermatitis. It may cause skin sensitization and allergic contact dermatitis. Vapors are irritating to eyes. May be absorbed through the skin.
Potential Risks: This liquid is a health risk, especially in high concentrations. It is a precursor in the production of amphetamines, making it a hazard to those exposed during the manufacturing process.

Benzyl chloride (CAS 100-44-7)
Form: Liquid, colorless to slightly yellow, pungent aromatic odor
Use: Used in methamphetamine production
Physical properties: Boiling point 179°C (355°F), vapor density 4.4, vapor pressure 1 mmHg, odor threshold 0.04 ppm
Exposure limits: PEL 1 ppm, IDLH 10 ppm
Hazards: Severe irritant to the eyes, mucous membranes and skin. It will produce lacrimation at low concentrations and also weakness, irritability, and persistent headache. At sufficient concentration inhalation may produce pulmonary edema. Liquid in the eye can produce severe irritation and corneal injury. Skin contact may produce dermatitis and skin sensitization.
Potential Risks: This liquid, which is used in methamphetamine production, is a severe irritant to the eyes and can have other harmful effects to individuals present during the manufacturing process.

Benzene (CAS 71-43-2)
Form: Colorless to light-yellow liquid, aromatic odor
Use: Solvent used in methamphetamine production

Physical properties: Boiling point 80°C (176°F), vapor pressure 74.6 mmHg, vapor density not determined
Exposure limits: TLV-TWA 1 ppm, STEL 5 ppm, IDLH 500 ppm
Hazards: Vapor in high concentration may affect the nervous system causing headache, dizziness, breathing difficulties, coughing, fluid in the lungs, coma, lung, liver, or kidney damage, or death. Prolonged inhalation may lead to anemia or leukemia. Chronic exposure can irritate the eyes, nose, throat and lungs and may affect the central nervous system, bone marrow, and respiratory tract. Symptoms include allergies, confusion, headache, short term memory loss, coma, or death. Benzene is extremely flammable and vapor may cause a flash fire.
Potential Risks: Benzene is used in methamphetamine production. It is extremely flammable and inhalation of the vapors is very hazardous to exposed individuals present during the manufacture, cleanup, and response to fire. Chronic exposure, especially in young children can cause severe health problems.

Coleman Fuel (Light Hydrotreated Distillate) (CAS 68410-97-9)
Form: Liquid
Use: Solvent used to extract d-methamphetamine
Physical properties: Boiling point 38°C (100°F), vapor pressure 518 mmHg, vapor density 3
Exposure limits: TWA 400 ppm
Hazards: Vapor may cause delayed lung injury, nervous system depression, convulsions, and loss of consciousness. Irritant to skin and eyes. Can form flammable mixture with air at room temperature.
Potential Risks: Coleman fuel is a solvent used in the extraction of d-methamphetamine. It is hazardous due to its flammability when mixed with air. Vapors are a health hazard to individuals during the manufacturing phase.

Ephedrine (CAS 299-42-3)
Form: White crystal, odorless
Use: Precusor in manufacture of methamphetamines
Physical properties: Not available
Exposure limits: None
Hazards: Irritant to eyes, skin, and respiratory system. Ingestion may lead to headache, rapid pulse, high blood pressure and stroke.
Potential Risks: Ephedrine is a precusor used in the manufacture of methamphetamines. In addition to being an irritant, ingestion of excessive amounts can have serious effects.

Ethanol (CAS 64-17-5)
Form: Clear, colorless liquid
Use: Used in the production of methamphetamine
Physical properties: Boiling point 79°C (173°F), vapor pressure 5.8 mmHg, vapor density 1.6
Exposure limits: TLV-TWA 1000 ppm, IDLH 3300 ppm
Hazards: Inhalation may irritate the nose and throat, causing headache, nausea, vomiting, drowsiness, or confusion. Ingestion can lead to burning sensation, confusion, dizziness, seizures, blurred vision, blindness, unconsciousness, or death. Chronic exposure may lead to headache, lack of coordination, fatigue, damage to nervous system, liver, stomach, and heart. Vapor and liquid are extremely flammable.
Potential Risks: Ethanol and its vapors are extremely flammable, making it a health risk to all present. Ingestion is common and in large amounts can lead to severe health effects in children.

Ethyl Ether (CAS 60-29-7)
Form: Colorless liquid, sweet pungent odor
Use: Solvent used in the manufacture of methamphetamine and amphetamine
Physical properties: Boiling point 35°C (94°F), vapor pressure 58.6 mmHg, vapor density 2.6
Exposure limits: TLV-TWA 400 ppm, STEL 500 ppm, IDLH 1900 ppm
Hazards: Inhalation or ingestion causes headache, drunkenness, and vomiting. Flammable and highly volatile. In the presence of oxygen or sunlight, unstable peroxides may form, which explode spontaneously or when heated.
Potential Risks: This solvent is used in the manufacture of both amphetamine and methamphetamine. Inhalation can lead to toxic nervous system effects. It is highly volatile and flammable making it a risk to all those in the vicinity and to individuals responding to a fire.

Formic Acid (CAS 64-18-6)
Form: Colorless liquid, pungent odor
Use: Used in the manufacturing process
Physical properties: Boiling point 101°C (224°F), vapor pressure 4.6 mmHg, vapor density 1.6
Exposure limits: TLV-TWA 5 ppm, STEL 10 ppm, IDLH 30 ppm
Hazards: Corrosive to eyes, skin, lungs and gastrointestinal tract. It is readily absorbed into the skin, causing piercing pain, reddening, burns, and severe toxic effects. Vapor may cause severe irritation of the eyes, nose and throat. Severe inhalation leads to accumulation of fluid in the lungs, shock and death. Ingestion can produce severe burns, bloody diarrhea, and agonizing pain. Non-flammable, but may explode violently on contact with oxidizing agents.
Potential Risks: This acid is corrosive to the skin and also can cause severe toxic effects from absorption into the skin. Inhalation may cause accumulation of fluid in the lungs and even death. It can explode violently when in contact with oxidizing reagents. It is a hazard to all individuals present during manufacturing and cleanup.

Hexane (other isomers)
Form: Colorless liquid, mild characteristic odor
Use: Solvent used in production of methamphetamine
Physical properties: Boiling point 69°C (156°F), vapor pressure 16 mmHg, vapor density 3.0
Exposure limits: TLV-TWA 500 ppm, STEL 1000, IDLH 1100 ppm
Hazards: Prolonged exposure can lead to permanent brain and nerve damage with coughing, bizarre behavior, unconsciousness, coma, or death. Extremely flammable.
Potential Risks: Hexane is an extremely flammable solvent used in the production of methamphetamine, making it a risk to all individuals in the area or responding to fire. Its heath effects from chronic exposure make it harmful to laboratory residents, especially children.

Hydrochloric Acid (Muriatic acid) (CAS 7647-01-0)
Form: Colorless liquid, pungent odor (Muriatic acid refers to an industrial grade of hydrochloric acid)
Use: Reagent used in the manufacture of methamphetamine
Physical properties: Boiling point 53°C (127°F), vapor pressure 190 mmHg, vapor density no information found
Exposure limits: PEL-C 5 ppm, IDLH 50 ppm (as hydrogen chloride gas)
Hazards: Very corrosive. Causes severe pain and burns on the skin. Inhalation may destroy the lining in the airways, throat, and lungs. Can lead to permanent lung damage. Prolonged exposure may cause tooth decay and skin allergies. Heating can lead to release of toxic, flammable and explosive gas.
Potential Risks: This acid is a reagent used in the production of methamphetamine. It is very corrosive, causing severe burns on contact and lung damage if inhaled. Gases released during heating are toxic and also flammable and explosive, making it a hazard to inhabitants of the laboratory, those involved in cleanup, and first responders.

Hydrogen Chloride (CAS 7647-01)
Form: Colorless gas
Use: Used in the manufacture of methamphetamine
Physical properties: Boiling point -85°C (-121°F), vapor density 1.3
Exposure limits: TLV-C 5 ppm, IDLH 50 ppm
Hazards: High concentrations are very corrosive and may cause severe burns. Inhalation may cause mild to severe irritation of the nose and throat with possible fluid in the lungs.
Potential Risks: This gas used in the manufacture of methamphetamine in very corrosive, causing severe burns. It is a heath hazard to individuals present in the laboratory and those involved in cleanup.

Hydrogen iodide (gas), Hydriodic acid (liquid) (CAS 10034-85-2)
Form: Gas (soluble in water), colorless
Use: Reagent in methamphetamine synthesis, with red phosphorous
Physical properties: Boiling point -35.1°C (-31.2°F), vapor density 4.4, odor threshold not available
Exposure limits: None

Hazards: Corrosive and irritant. Exposure can occur to both liquid and gas. Inhalation causes irritation of the throat and upper respiratory tract, and at higher concentrations dyspnea, chest pain, bronchospasm, and pneumonitis. Severe exposures result in pulmonary and laryngeal edema. Will cause severe irritation to the eyes. Skin contact at high concentrations may lead to burns.
Potential Risks: This substance may be in gas or liquid form and is used in the red phosphorous method of methamphetamine synthesis. It is corrosive and an irritant. It is a health risk to both inhabitants of the laboratory and first responders.

Hypophosphorous Acid (CAS 6303-21-5)
Form: Colorless liquid
Use: Used instead of red phosphorus as reagent in methamphetamine
Physical properties: Boiling point not found, vapor pressure less than 17 mmHg
Exposure limits: None
Hazards: Corrosive. Causes burns if inhaled or on contact with skin. Extremely destructive to mucous membranes.
Potential Risks: This acid is corrosive, causing burns to those inhaling its vapors and those in direct contact with it.

Iodine (CAS 7553-56-2)
Form: Solid, purple crystals or flakes, sharp odor
Use: Reagent in synthesis of hydriodic acid
Physical properties: Melting point 113°C (236°F), boiling point 184°C (364°F), vapor pressure 0.3 mmHg at 25°C (77°F), vapor density 4.93, odor threshold 0.85 ppm (9.0 mg/m^3), irritating concentration 2.0 mg/m^3 (0.19 ppm)
Exposure limits: TLV-C 0.1 ppm, IDLH 2 ppm
Hazards: Corrosive. Ingestion of iodine will cause vomiting, delirium, headache, low blood pressure, and circulatory collapse. Inhalation of iodine vapors is very irritating to the mucous membranes and at high concentrations may lead to pulmonary edema. Skin contact may cause redness and swelling.
Potential Risks: Iodine is used in the manufacture of hydriodic acid for methamphetamine synthesis. It is corrosive and can cause serious health problems if ingested or inhaled in high concentrations. It can be a risk for those present in the laboratory and individuals involved in cleanup.

Iodine, Prill (CAS 7553-56-2) See Iodine
Form: Round beads of iodine

Iodine, tincture
Form: Dark red solution with a medicinal odor
Use: Reagent in synthesis of hydriodic acid
Physical properties: Boiling point 82°C (180°F), vapor pressure 10 mmHg, vapor density >1
Exposure limits: TLV-C 0.1 ppm, IDLH 2 ppm
Hazards: Harmful if inhaled or swallowed. May cause intoxication and severe irritation. Flammable.
Potential Risks: This reagent, used in hydriodic acid synthesis, is flammable, making it a hazard to all present individuals and those responding to fire. It is harmful if inhaled and can cause intoxication if swallowed.

Lead acetate (CAS 301-04-2)
Form: Solid, white crystals or for commercial grades brown or grey lumps, odorless
Use: Reagent in P2P synthesis
Physical properties: Melting point 280°C (536°F)
Exposure limits (for lead): TLV-TWA 0.05 mg/m^3, IDLH 100mg/m^3
Hazards: Mostly a chronic exposure hazard by ingestion or inhalation of dust. Will form fumes at high temperatures. Poisoning symptoms include abdominal cramping, nausea, anorexia, vomiting, constipation, diarrhea, and difficulty concentrating. Children are more susceptible to exposure due to increased absorption and greater effects on the developing nervous system.
Potential Risks: This crystalline material is used in P2P syntheis. Health hazard is mainly from chronic exposure, especially in children.

Lithium aluminum hydride (CAS 1302-30-3)
Form: Solid, white to grey powder, odorless
Use: Used for hydrogenation in multiple processes
Physical properties: Decomposes at 125°C (257°F) to form lithium hydride, aluminum metal, and hydrogen
Exposure limits: None
Hazards: Corrosive. Extremely water reactive, will generate hydrogen gas and explode. It is severely irritating to the eyes, nose, skin, mucous memebranes, and lungs. Eye exposure can result in scarring and inflammation.
Potential Risks: This solid is used in the hydrogenation process during methamphetamine production. It is corrosive and reacts with water to form explosive hydrogen gas, making it a risk to inhabitants and first responders.

Mercuric chloride (CAS 7487-94-7)
Form: Solid, white crystals, odorless
Use: Reagent in methamphetamine synthesis, P2P method
Physical properties: Melting point 276°C (529°F), boiling point 302°C (576°F)
Exposure limits (for mercury compounds): TLV-TWA 0.025 mg/m^3, IDLH 10 mg/m^3
Hazards: Corrosive. Ingestion results in intense epigastric and abdominal pain and emesis which my be bloody, and later renal failure. Inhalation of dust can cause respiratory irritation, major destruction of lungs and airways, kidney failure, shock, and bizarre behavior. Eye exposure can lead to corrosive injury. Chronic exposure may lead to build up in the brain, liver, and kidneys. Releases toxic fumes when heated.
Potential Risks: This solid reagent used to manufacture methamphetamine and P2P is a corrosive chemical. Inhalation as well as ingestion, can cause severe health hazards. Long-term exposure may lead to brain, liver, and kidney damage, making this chemical hazardous to those living in the laboratory and those involved in cleanup. Toxic fumes released upon heating make it a potential hazard to first responders as well.

Methyl Alcohol (HEET) (CAS 67-56-1)
Form: Clear colorless liquid, characteristic odor
Use: Used in the production of methamphetamine
Physical properties: Boiling point 64.5°C (147°F), vapor pressure 97 mmHg, vapor density 1.1
Exposure limits: TLV-TWA 200 ppm, STEL 250 ppm, IDLH 6000 ppm
Hazards: Vapors may cause irritation of the eyes, nose, throat, and lungs. Ingestion may lead to headache, nausea, abdominal pain, loss of consciousness, coma, blindness, and brain, pancreas, or kidney damage. Flammable.
Potential Risks: Methyl alcohol is used in the synthesis of methamphetamine. Its vapors are irritants and acute ingestion can lead to blindness and other organ damage, making it a danger to inhabitants of the laboratory, especially children. It is flammable and therefore a risk to first responders.

Methylamine (CAS 74-89-5)
Form: Gas or liquid, colorless, strong fish/ammonia odor (Usually encountered as a 40% weight/volume in water)
Use: Precursor for methamphetamine
Physical properties: Boiling Point -6.3°C (20.6°F), vapor density 1.07, odor threshold 4.7 ppm
Exposure limits: TLV-TWA 10 ppm, STEL 15 ppm, IDLH 100 ppm
Hazards: Severe irritant to the eyes, mucous membranes and skin. It has been reported to be linked with the generation of allergic or chemical bronchitis. Exposure to this compound can lead to olfactory fatigue. Exposure to the eye can cause conjunctival hemorrhage, and superficial corneal opacities and edema. On the skin a 40% solution caused tissue destruction.
Potential Risks: This chemical, found as either a gas or liquid, is a precursor in methamphetamine production. It is a severe irritant and can cause chemical bronchitis. It is a hazard to individuals in the laboratory during the manufacturing process and those involved in cleanup.

Muriatic Acid (see Hydrochloric Acid)

Naphtha (CAS 8002-05-9)
Form: Reddish-brown liquid, aromatic odor
Use: A petroleum distillate solvent used in the manufacture of methamphetamine
Physical properties: Boiling point 104°C (220°F), vapor pressure 22 mmHg, vapor density 3.4
Exposure limits: PEL 500 ppm, IDLH 1100 ppm
Hazards: May cause irritation or burns to skin and eyes. Inhalation may lead to central nervous system depression, headache, nausea, dizziness, confusion, and unconsciousness.
Potential Risks: Naphtha is an aliphatic petroleum solvent used in the manufacture of methamphetamine. Inhalation can have serious effects, making it a health hazard to individuals present during the manufacturing process.

Nitroethane (CAS 79-24-3)
Form: Liquid, oily colorless, mild fruity smell.
Use: Precursor for P2P synthesis
Physical properties: Boiling point 114°C (237°F), vapor pressure 21 mmHg at 25°C (77°F), vapor density 2.58, odor threshold 163 ppm
Exposure limits: PEL 100 ppm, IDLH 1000 ppm
Hazards: Skin, eye and mucous membrane irritant. It may cause anorexia, nausea, vomiting and diarrhea. In animals it has resulted in renal and liver toxicity, and is a central nervous system depressant. It produces weakness, ataxia and convulsions. Its vapors cause irritation to the respiratory tract, coughing, or difficulty in breathing. Skin exposure may produce erythema and swelling with pain. Eye exposure may cause irritation.
Potential Risks: Nitroethane is used as a precursor for P2P synthesis. It is an irritant and may be harmful to those present during the manufacturing process.

Phenylacetic acid (CAS 103-82-2)
Form: Solid, white shiny crystals, floral odor.
Use: Precursor for the synthesis of P2P
Physical properties: Melting point 76.5°C (170°F), boiling point 265°C (510°F) , vapor pressure 0.004 mmHg, vapor density 1.09, odor threshold not available
Exposure limits: None
Hazards: Irritant. Oral toxicity of this compound is low. It is slightly irritating to the skin. It is a possible teratogen. Eye exposure may result in mild irritation. Inhalation of the compound may lead to headache, nausea, and dizziness.
Potential Risks: This precursor of P2P is an irritant and a possible teratogen. It is most hazardous to those present during the synthesis of P2P.

Phenyl-2-propanone (P2P) (CAS 103-79-7)
Form: Liquid
Use: Precursor for methamphetamine
Physical properties: Boiling point 215°C (419°F), vapor density 1.003
Exposure limits: None
Hazards: Oral toxicity of this compound is low. It is slightly irritating to the skin. Eye exposure would result in mild irritation. Inhalation of the compound may lead to headache, nausea, dizziness. These symptoms may be due to the organic nature of the compound or to the odor.
Potential Risks: This precursor of methamphetamine is an irritant to the skin. Inhalation may cause symptoms. It is a health risk to those inhabiting the laboratory.

Phosphine (CAS 7803-51-2)
Form: Colorless gas, fish- or garlic-like odor
Use: Product of methamphetamine production
Physical properties: Boiling point –87.7°C (-125.9°F), vapor pressure 31500 mmHg, vapor density 1.18
Exposure limits: TLV-TWA 0.3 ppm, STEL 1.0 ppm, IDLH 50 ppm
Hazards: Extremely flammable, reacts explosively with air. Inhalation may cause dizziness, dullness, tremors, vomiting, shortness of breath, delayed lung damage and convulsions.

Potential Risks: Because of its explosive reaction with air, phosphine gas is a hazard to those present in the laboratory during the manufacturing process and first responders. It has been linked to several deaths in clandestine laboratories.

Phosphoric Acid (CAS 7664-38-2)
Form: Hygroscopic, colorless crystals
Use: Precursor in production of methamphetamine and amphetamine
Physical properties: Boiling point 213°C (415°F), vapor pressure 4 mmHg, vapor density 3.4
Exposure limits: TVL-TWA 1 mg/m^3, STEL 3 mg/m^3, IDLH 1000 mg/m^3
Hazards: Eye irritant causing irritaion, tearing, blinking, and burns. Vapor can irritate nose and throat. Exposure to skin results in irritation, redness, itching, swelling, and burns. Chronic exposure may cause allergies, damage to lungs, liver, bloodstream, and bone marrow. Contact with metal can cause release of poisonous and explosive phosphine gas.
Potential Risks: A precursor used in methamphetamine and amphetamine, this acid is an irritant to eyes, nose, and throat. Long-term exposure may be damaging to lungs, liver, and bone marrow, making it harmful for individuals living in the laboratory, especially children.

Pseudoephedrine (CAS 321-97-1)
Form: White crystalline powder
Use: Precusor used in the production of methamphetamines
Physical properties: Not available
Exposure limits: None
Hazards: Irritant to eyes, skin, and respiratory system. Ingestion may lead to headache, rapid pulse, high blood pressure and stroke.
Potential Risks: Ephedrine is a precusor used in the manufacture of methamphetamines. In addition to being an irritant, ingestion of excessive amounts can have serious effects.

Pyridine (CAS 110-86-1)
Form: Liquid, colorless to yellow, nauseating fish-like odor
Use: Reagent in the synthesis of P2P from phenylacetic acid in the presence of acetic anhydride.
Physical properties: Boiling point 115°C (240°F), vapor pressure 16 mmHg, vapor density 2.73, odor threshold 0.74 ppm
Exposure limits: PEL 5 ppm, IDLH 1000 ppm
Hazards: Irritant and central nervous system depressant. On ingestion it may cause liver and kidney damage. Exposure to vapor may cause headache, vertigo, nervousness, sleeplessness, nausea, and vomiting. Lower back pain may develop with no evidence of kidney damage. Skin irritation may result from prolonged or repeated contact.
Potential Risks: This reagent used to produce P2P can cause central nervous system depression. Vapor can cause symptoms in individuals present during the manufacturing process.

Red phosphorus (CAS 7723-14-0)
Form: Solid, red to violet, odorless
Use: Catalyst in methamphetamine synthesis
Physical properties: Burns when heated in air to 260°C (500°F) with formation of pentoxide fumes.
Exposure limits: None
Hazards: Red phosphorus is considered relatively non-toxic. If heated it can either produce toxic fumes or convert to yellow phosphorus which will burn on contact with air, and cause severe burns. If heated in the presence of acid, it can form phosphine gas.
Potential Risks: This catalyst in methamphetamine production is mainly a serious hazard due to its ability to form phosphine gas in the presence of acid. It is also explosive, making it a possible hazard to individual involved in cleaning laboratories and dump sites in addition to those present in the laboratory during the manufacturing process.

Ronsonol (Lighter Fluid)
Form: Reddish brown liquid, aromatic odor

Use: A petroleum distillate solvent consisting of twosolvent naphtha fractions, light aliphatic 95% (CAS 64742-89-8) and medium 5% (CAS 64742-88-7); and Shell Sol RB 100%.
Physical Properties: Similar to naphtha.
Exposure Limits: See "Naphtha"
Potential Risks: See "Naphtha"

Sodium (CAS 7440-23-5)
Form: Solid, silvery-white metal or crystals, odorless
Use: Used for hydrogenation in methamphetamine synthesis
Physical properties: Melting point 97.8°C (208°F), boiling point 883°C (1621°F)
Exposure limits: None available
Hazards: Corrosive. Extremely water reactive, producing hydrogen gas and sodium hydroxide. Metallic sodium can react with water on skin to cause thermal and chemical burns. It is severely irritating to the eyes, nose, skin, mucous membranes, and lungs. Eye exposure can result in scarring and inflammation.
Potential Risks: Sodium metal is corrosive and extremely water reactive, producing explosive hydrogen gas. It reacts with water on the skin to cause burns. It is a heath risk to individual present during manufacturing and first responders.

Sodium Hydroxide (Lye) (CAS 1310-73-2)
Form: White pellets or flakes, odorless
Use: Reagent used in methamphetamine manufacture
Physical properties: Boiling point 1390°C (2534°F), vapor pressure negligible, vapor density 1.0
Exposure limits: TLV-C 2 mg/m^3, IDLH 10 mg/m^3
Hazards: Very corrosive. Contact of the eyes with vapor or powder can cause severe eye burns with permanent damage. Contact with skin causes severe irritation and burns. Inhalation of vapors and dust can lead to burns of the lungs and air passages. Carcinogen if ingested. Contact with metals or fire may produce deadly and explosive hydrogen gas.
Potential Risks: This reagent, used in the manufacture of methamphetamine, is very corrosive. It can cause severe burns of the eyes, skin, and the lungs. In the presence of metals or fire, explosive gas may result, making it a hazard to those present in the laboratory and first responders.

Sulfuric Acid (CAS 7664-93-9)
Form: Colorless to yellow viscous liquid, odorless
Use: Reagent used in manufacture of amphetamine, methamphetamine, and P2P
Physical properties: Boiling point 290°C (554°F), vapor pressure 7 mmHg
Exposure limits: TLV-TWA 1 mg/m^3, STEL 3 mg/m^3, IDLH 15 mg/m^3
Hazards: Contact with eyes causes severe burns, pain, tearing swelling, permanent damage, or blindness. Corrosive to the skin, causing severe deep burns, blistering, swelling, and scarring. Harmful or fatal if inhaled, causing possible lung damage, cough, difficulty breathing, and subsequent respiratory failure. Chronic exposure may lead to lung damage, skin allergies, kidney and liver damage. Reacts violently with water to produce toxic and corrosive fumes. Carcinogen.
Potential Risks: This reagent is used in the manufacture of amphetamine and methamphetamine. It may cause severe burns on contact and may be harmful or fatal if inhaled. Chronic exposure may lead to damage of liver, lungs and kidneys. It reacts violently with water to produce corrosive fumes. It presents health risks to those present during manufacturing,

Thionyl chloride (CAS 7719-09-7)
Form: Liquid, colorless, pale yellow, or reddish, with a suffocating pungent odor
Use: Reagent in methamphetamine synthesis
Physical properties: Boiling point 76°C (169°F), decomposes at 140°C (284°F) to form Cl_2, SO_2, and S_2Cl_2, vapor pressure 100 mmHg at 21°C (70°F), vapor density 4.1, odor threshold not available
Exposure limits: TLV-C 1 ppm, IDLH not determined
Hazards: Strongly irritating or caustic to the eyes, lungs, skin, and mucous membranes. Severe acute exposure may result in pulmonary edema, pneumonia, and death. Skin exposure may cause irritation, burning and dermatitis. Eye exposure may produce burns, conjunctivitis and corneal damage.

Potential Risks: This reagent used in the manufacture of methamphetamine can cause irritation of eyes, lungs and skin. Overexposure may lead to pulmonary edema or even death. Individuals most at risk are those present during the manufacturing process.

Thorium oxide (CAS 1314-20-1)
Form: Solid, white crystals (sand-like), odorless
Use: Catalyst for P2P synthesis
Physical properties: Melting point 3390°C (6134°F), boiling point 4400°C (7952°F)
Exposure limits: None available other than general standards for radioactive materials
Hazards: Thorium is a radioactive alpha-emitter, which is toxic if ingested or inhaled. Carcinogen
Potential Risks: A catalyst for P2P synthesis, thorium oxide in a radioactive material and is toxic if ingested or inhaled. It is most harmful to those having chronic exposure, such as children and others inhabiting the laboratory.

Toluene (CAS 108-88-3)
Form: Clear, colorless liquid, benzene-like aroma
Use: Solvent used in manufacture of P2P and methamphetamine
Physical properties: Boiling point 111°C (232°F), vapor pressure 22 mmHg, vapor density 3.14
Exposure limits: TLV-TWA 50 ppm, IDLH 500 ppm
Hazards: Inhalation may cause irritation of the skin, nose, throat, and lungs, as well as nausea, weakness, drunkenness, confusion, and loss of consciouness. Highly flammable.
Potential Risks: It is an irritant to the skin and respiratory system, and has significant effects on the nervous system. It is highly flammable, making it a hazard for first responders as well as those present during the manufacturing process.

1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon) (CAS 76-13-1)
Form: Clear, colorless liquid, slight ethereal odor
Use: Solvent used to extract d-methamphetamine
Physical properties: Boiling point 47°C (117°F), Vapor pressure 284 mmHg, vapor density 6.5
Exposure limits: TLV-TWA 1000 ppm, STEL 1250 ppm, IDLH 2000 ppm
Hazards: Vapor can cause eye irritation, burning and damage. Inhalation can cause sudden cardiac death. Freon interferes with the heart's rhythm. Symptoms may include slurring, vomiting, drunkenness, coma, and death.
Potential Risks: Freon is used as a solvent to extract d-methamphetamine. The vapor can cause eye irritation and damage. Inhalation can be deadly. This solvent is a serious health hazard to individuals present during the manufacturing process.

Phase II

Recommendation of Remediation/Work Practices and Clean Up Levels

Introduction

After removal of illicit laboratory equipment and chemicals from an illegal drug-manufacturing site, residual amounts of some substances may persist on building surfaces, furnishings and household items. Substances formerly present in active lab environments such as gases or volatile solvents should dissipate rapidly with ventilation, unless there has been a significant spill or saturated surfaces remain. However, non-volatile materials such as drug residues, other solids, or water-based solutions of non-volatile materials (certain corrosives) may persist on surfaces and require clean up. In many cases residues of substances such as red phosphorous and iodine leave stains or other visible evidence of contamination.

Although each site and situation will differ and may require changes in the scope of decontamination procedures, recommendations described in the following sections provide a general overview for decontamination procedures. They also represent a reasonable standard of good practice designed to reduce the levels of contaminants so the site can be reoccupied. It is impossible to provide recommendations for every conceivable circumstance, and these guidelines should be interpreted with the understanding that all individuals involved in remediation of methamphetamine laboratories will be expected to previously have completed a training/certification course.

Certain general assumptions must be made regarding the effective decontamination of illegal drug manufacturing sites; they include:

- The most cost-effective approach is to remediate the structure using a logical, step-wise approach followed by testing for contaminants to ensure adequate clean up. This approach is based on the premise that pre-remediation testing will only add to the total cost of the clean up, and that demolition is not more cost-effective.
- The immediate areas where chemical reactions were conducted and product used are likely the most contaminated, although this information may not be known.
- The degree to which areas adjoining a drug manufacturing laboratory are significantly cross-contaminated is difficult to predict. As a result, it is generally most cost effective to assume low-level contamination by non-volatile materials and rid these and other areas of all potentially contaminated porous materials or items.

Specific steps in the decontamination procedure are listed below:

Recommended Remediation Procedures

Preliminary Steps

- A written work plan should be filed with the appropriate agency.

- Personal protective equipment including protective clothing, gloves and approved respiratory protection should be worn by individuals involved in the remediation of residues from former illicit methamphetamine laboratories. Properly fitted air-purifying respirators equipped with combination mechanical/chemical cartridge filter elements are recommended for use by remediation personnel.

- All materials that are porous such as carpets, draperies, bedding, fabric-covered furniture, porous drop ceilings, clothing and related items should be removed and properly disposed of as if they are contaminated. This includes porous materials outside the immediate area of the manufacturing process. Generally, it is not cost effective to pre-sample such items for contamination to justify their removal. Further, such materials/items provide extremely large surface areas for redistribution and re-entrapment of contaminates, even when the level of contamination is low. An optional approach would involve cleaning and testing (at the discretion of the building owner).

- The ventilation system for the site should be decontaminated and then sealed off to prevent re-contamination during the remainder of the remediation process. Any system that is constructed of non-porous material such as sheet metal or the equivalent may be HEPA vacuumed. The system should then be washed down to arms length with an appropriate grease cutting soap or detergent and rinsed, repeating two additional times. All filters should be replaced and properly disposed of. Plastic ductwork, if readily accessible, may be removed and replaced. If inaccessible, it can be HEPA vacuumed, washed and rinsed to arms length. Ducts constructed with an internal lining of reinforced fiberglass should be carefully HEPA vacuumed to arms length. If supply air diffusers cannot be easily cleaned, it may be more cost-efficient to replace them. Post-remediation testing of the site with the ventilation system operating can be used as verification of effective decontamination.

Secondary Steps

Areas with no contamination

- Rooms outside the immediate area of the manufacturing process should be remediated next to avoid cross contamination. One of these areas, preferably remote from the manufacturing process, can be cleaned according to the steps described below and then serve as a storage area for any portable items cleaned during remediation.

- Room/area surfaces that are smooth, easily cleanable, and anticipated to be reasonably free from contamination should be HEPA vacuumed and then washed with a standard detergent solution and rinsed. The wash and rinse should be repeated an additional two times. Such surfaces include floors (cement, wood, etc), walls, ceilings, windows, doors and non-fabric furniture. The doors or openings to these areas should be cordoned off with heavy mil plastic sheeting to avoid recontamination during further remediation of the site. Porous drop ceilings

should be HEPA vacuumed. Popcorn ceilings, due to potential asbestos content, should be left undisturbed and a sample collected to determine the level of contamination.

Areas with visible contamination

- All smooth surfaces in areas with a high probability for contamination (such as kitchens, bathrooms and other areas where laboratory equipment was set up) that show evidence of staining due to laboratory operations including wallboard (sheet rock), wood furniture, wood flooring, tile flooring, etc. should be removed and properly disposed of. Nonporous surfaces such as bathtubs and toilets that can be cleaned to the point of stain removal can be left in place, although the stain may recur at a later time. Any material behind such a surface should be inspected for contamination and removed if contamination is evident.

- Non-stained surfaces or items that are smooth and easily cleanable should be decontaminated in place. Portable items should be transferred to an adjacent pre-cleaned room/area. Efforts should be made to avoid cross-contaminating pre-cleaned areas where decontaminated items are being stored. Disposable plastic runners may be used for such purposes. Small items that cannot be cost-effectively cleaned should be removed and properly disposed of.

- Concrete surfaces in areas with a high probability for contamination (eg manufacturing processes and immediately adjacent areas) should be thoroughly cleaned with a standard detergent solution (for example, trisodium phosphate) and then thoroughly rinsed. This cleaning procedure should be repeated two additional times using a fresh detergent solution, with frequent changes of the rinse water.

- Appliances (such as refrigerators and stoves) that have insulation or other inaccessible parts that either show visible contamination or are highly suggestive of such contamination should be removed and properly disposed of, since this is usually the most cost-effective approach. At the discretion of the building owner, appliances could alternately be thoroughly cleaned and tested.

Plumbing, septic/sewer, soil

- Drug manufacturing reactions often take place in tubs and showers, and the chemicals involved are typically dumped down toilets and drains. These areas should be evaluated for visual staining and materials properly disposed of if such staining is present. If VOC concentrations emanating from the plumbing (assuming the traps are full of water) exceed remediation levels, accessible piping and traps may need to be replaced.

- If the dwelling is on a septic system, the tank liquid should be tested for solvents and, if found to be contaminated, the contents disposed of properly according to local regulations.

- For common sewers, no special cleaning is generally recommended, although the appropriate wastewater management authority should be contacted and advised of the presence of an illicit drug laboratory.

- The exterior of the "residential" setting should also be inspected for evidence of contamination. Clues to potential contamination would include stains or residues (distinctive discolorations) on soil or on other outdoor surfaces such as driveways. Particular attention should be directed to burn sites and garbage piles.

- All highly contaminated materials recommended for discard during the remediation process should be properly disposed of at a hazardous waste site.

Post-remediation Testing/Clearance Levels

Types of Testing

In general, testing should be done after remediation has been completed in order to minimize additional costs. An exception may be the requirement of an insurance agency to document contamination prior to remediation, or at the discretion of the building owner.

Testing may include surface wipes for methamphetamine, volatile organic solvent monitoring and surface pH evaluation. Chemical-specific testing is listed in Table 1. All septic tanks should be tested for the presence of solvents, and soil testing may be indicated in particular instances. Lead and mercury testing should be limited to illicit drug laboratories where there is clear evidence or high suspicion of use of these metals. All areas tested must be photographed for documentation. Although not covered in this document, ground and surface water testing may also be indicated.

Table 1. Chemical-specific remediation levels (see text for additional details)

Red phosphorus	Removal of stained material
Iodine crystals (including flakes and prill)	Removal of stained material
Tincture of iodine	Removal of stained material
Methamphetamine	0.1 μg methamphetamine /100 cm^2
Ephedrine/pseudoephedrine	0.1 μg methamphetamine /100 cm^2
Solvents*	VOC air monitoring < 1 ppm
Corrosives†	Surface pH 6-8
Lead	4.3 μg lead /100 cm^2
Mercury	3 μg mercury /m^3 air

* Solvents include but are not limited to toluene, acetone, Coleman fuel, methyl alcohol, naphtha and Ronsonol. This is for air monitoring only and does not apply to septic tanks.
† Corrosives include but are not limited to hydrochloric acid (including muriatic acid), hypophosphorous acid, and sodium hydroxide.

Removal of stained materials is the best means of remediating for contamination involving red phosphorus, iodine crystals, and tincture of iodine. Although not preferred, where removal of stained material is not a reasonable option (such as on concrete), the surface can be power-washed, allowed to dry, and then sealed. However, stains may reappear at a later time.

Methamphetamine testing has been selected as the principal indicator of contamination based on previous studies and general experience demonstrating elevated levels in methamphetamine laboratories. Cleaning to the following standard should also provide reasonable assurance that ephedrine and pseudoephedrine levels are within acceptable limits. If the lab was not manufacturing methamphetamine and there is no likelihood that methamphetamine was used by those individuals residing in the structure, then methamphetamine testing is not indicated.

- Surface swabs for methamphetamine must not exceed 0.1 µg/100 cm^2. A similar level of remediation has been successfully achieved in former methamphetamine laboratories in the State of Oregon.

    - For each room in the structure, testing will be required using a composite sample of three 100 cm^2 swabs from floor, wall, and ceiling.
    - Testing must be done on at least three separate locations/components of the ventilation system, specifically including the supply air diffuser and the ductwork immediately adjacent to the supply air diffuser. This testing must be done after the furnace has been supplying heated air for at least one hour.
    - If a kitchen is in the structure, additional wipes will be collected and analyzed from the countertop/sink/stovetop (combined composite sample) and from the floor in front of the stove.
    - If a bathroom is in the structure, additional wipes may be collected and analyzed. Generally a combined composite sample should be selected from the toilet, tub/shower and sink surfaces, although specific sampling may vary depending on individual situations.
    - After cleaning and sealing, any area showing visible stain that could reasonably be associated with drug manufacture must be tested.
    - After cleaning, any major appliances need to be tested.

Volatile organic compound testing will provide reasonable assurance that toluene, methyl alcohol, Coleman fuel, naphtha, Ronsonol, acetone and other common solvents are not present at levels posing a health and safety hazard.

- Volatile organic compound testing should be completed in all rooms of the structure, as well as over soils suspected of contamination. Measured levels must not exceed 1 part per million (ppm). Calibrated photoionization detectors are acceptable measurement instruments, although other suitable technology can be used as well.

Surface pH testing should provide reasonable assurance that hypophosphorous acid, hydrochloric acid (muriatic acid), sodium hydroxide, and other common acids and bases are not present at levels posing a health hazard.

- pH testing will be completed on all horizontal surfaces. The acceptable pH range is between 6 and 8.

The septic tank should be sampled for solvents. If specific solvent concentrations exceed applicable standards, then additional sampling of the leach field is required.

When lead or mercury is discovered or there is high suspicion that they are present in an illicit drug laboratory environment, testing should be carried out.

- Surface lead contamination must be less than 4.3 $\mu g/100\ cm^2$
- Mercury vapor concentrations must be less than 3 $\mu g/m^3$.

The lead concentration is set based on U.S. Environmental Protection Agency lead dust clearance standards. The mercury concentration is set based on the lower limit of detection of the most common direct-reading mercury vapor monitor. If mercury is found or highly suspected, all traps in the plumbing system should be evaluated for the presence of mercury and either replaced or cleaned.

Specific Testing Procedures

For methamphetamine sampling, a filter paper (Whatman 40 ashless is preferred since the manufacturer can confirm that the paper does not interfere with methamphetamine (GC/MS) analysis) should be folded into a 2.5 cm square. Using a freshly gloved hand or forceps, the surfaces of the filter should be wetted with analytical grade methanol. A 10 cm x 10 cm square template (usually made of Teflon or other material that will not contaminate the sample and is resistant to solvents) should be placed on the surface to be sampled. The 100 cm^2 surface area should be blotted horizontally with one side of the wetted filter and then vertically with the other. This procedure should be carried out uniformly at least 5 times in each direction. The filter should then be carefully rolled into a cylinder, placed in a glass jar and then secured with a Teflon-lined lid. Each jar should be labeled with date, time and sample location. Gloves should be changed and forceps and template cleaned between samples to prevent cross-contamination.

Volatile organic compound sampling can be completed in a cost-effective manner using a precalibrated photoionization detector or equivalent. Such instruments provide real-time, direct read measurements of VOC air concentrations. Concentrations should be measured in each room of the structure. The instrument may also be employed to detect sources of residual contamination.

pH measurements can be completed using deionized water and high quality pH test strips providing reasonable visual determination in the range of 6-8. Several ml of water should be applied to a surface, allowed to stand for 3-5 minutes, and then tested with the strip.

Content of septic tanks should be tested for solvents using a suitable analytic technique. One pint of tank supernatant should be collected by stirring the contents of the septic tank and taking a representative sample. This sample should be collected in a glass jar and secured with a septum lid or suitable alternative as accepted by the analytical laboratory, with the jar labeled with date, time and sample location. If the concentration of solvents are found to be in excess of applicable standards, soil samples should be collected from below the leach lines. Samples should be placed in glass jars, filled to the top to minimize head space, and secured with a septum lid or suitable alternative as accepted by the analytical laboratory. The jars should be labeled with date, time and sample location.

Soil samples should also be collected from suspected sources of outdoor contamination by scraping the surface of the soil to a depth of one inch. Samples should be placed in a glass jar, filled to the top to minimize head space, and secured with a septum lid or suitable alternative as accepted by the analytical laboratory. Each container should be properly labeled. Samples from burn sites or dump sites may be collected in a similar manner. Specific analytical methods used will depend on the chemical contaminants suspected to be present.

Lead samples should be collected as described for methamphetamine samples with the exception of substituting 3% nanograde nitric acid for the methanol.

Recommended Post-remediation Testing/Clearance Levels

Introduction

After removal of illicit laboratory equipment and chemicals from an illegal drug-manufacturing site, residual amounts of some substances may persist on building surfaces, furnishings and household items. Substances formerly present in active lab environments such as gases or volatile solvents should dissipate rapidly with ventilation, unless there has been a significant spill or saturated surfaces remain. However, non-volatile materials such as drug residues, other solids, or water-based solutions of non-volatile materials (certain corrosives) may persist on surfaces and require clean up. In many cases residues of substances such as red phosphorous and iodine leave stains or other visible evidence of contamination. This document describes post-remediation testing/clearance levels that should be obtained prior to reoccupation of the building, as well as specific testing procedures.

Types of Testing

In general, testing should be done after remediation has been completed in order to minimize additional costs. An exception may be the requirement of an insurance agency to document contamination prior to remediation, or at the discretion of the building owner.

Testing may include surface wipes for methamphetamine, volatile organic solvent monitoring and surface pH evaluation. Chemical-specific testing is listed in Table 1. All septic tanks should be tested for the presence of solvents, and soil testing may be indicated in particular instances. Lead and mercury testing should be limited to illicit drug laboratories where there is clear evidence or high suspicion of use of these metals. All areas tested must be photographed for documentation. Although not covered in this document, ground and surface water testing may also be indicated.

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Community and Environmental Health
Practice and Policy

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March 18, 2002

Patrick J. Cunningham
Special Litigation Counsel
Office of the Attorney General
1275 W. Washington
Phoenix, AZ 85007

Dear Mr. Cunningham:

Please find enclosed the final documents for Phases III and IV of the project. They have been revised based on the public comments received, which are also enclosed. Please contact me for any questions you might have or to receive electronic copies. We have enjoyed the opportunity to work with your office.

Sincerely,

Jefferey L. Burgess, MD, MPH

Encl: 1) Summary of public comments
2) Recommendation of Work Practices to Maintain Officer Safety
3) Standards for Certification of Illegal Drug Laboratory Remediation Specialist

Public Comment received on Phases III and IV

Heather McArthur, CIH Industrial Hygienist

City of Phoenix - Police Department

heather.mcarthur@phoenix.gov

On the certification for remediation specialist: Training instructor section - you need to define minimim standards for an instructor more clearly (i.e. specific technical knowledge, degrees, etc.)

On Work Practices for Officer Safety:

SSO requirements - add atmospheric testing requirements (i.e. testing for oxygene, LEL, etc.)

also in that section - minimum entry requirements should be equal to or greater than OSHA requirements. You have defined one standby person - OSHA requires at least two with SCBA.

PPE section - Why is the criminalist designated as making the decision about required PPE. That should be the responsibility of the SSO - strike criminalist from the wording. Later in the section you say SSO will determine PPE so just eliminate the contradiction. Also, minimum entry should always be with SCBA until downgraded by air testing by the SSO. This is an unknown atmosphere and therefore IDLH until proven otherwise."

Okay, a little more - In the Air Monitoring Equipment section, you need to add some wording about using the most effective equipment feasible. We have recently started using a Miran Sapphire for our clearance and it can detect 20 more additional chemicals in a direct reading mode. We also use a mineral acid gas indicator - direct reading.

If possible, just make wording to encourage the use of more technical and effective equipment as it becomes available. There is too much dependance on Drager tubes which are essentially not much more than a yes/no screening tool.

Thanks for all the work!"

Recommendation of Work Practices to Maintain Officer Safety

Phase III

Table of Contents

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, reduction of 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.

The type and scope of chemical and physical hazards that law enforcement officers may be exposed to during clandestine laboratory law enforcement activities are extremely diverse. For this reason, an ongoing health and safety program for law enforcement and forensic personnel working clandestine laboratory investigations should be in place. As part of this program, a Lab Safety Committee comprised of industrial hygienists, law enforcement, and forensic personnel 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 their immediate supervisor and the Clandestine Laboratory Coordinator;
- Ensures the completion of all appropriate reports/forms in a timely manner;
- Directs all phases if Case Agent is not laboratory safety certified;
- The On-Site Supervisor should consult with scientific support personnel on safety-related issues.

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,
- Is 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;
- Will assist the Criminalist in the 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 will 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 (40hr) 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 (8hr) 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 (8hr) 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 who respond 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 to be accomplished under the direct supervision of a lab certified/ site supervisor. Individuals will 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 will receive a written certificate, verifying they are 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.

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

Supervisors 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
X = Not Applicable
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;
- Identify 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.
- Identify 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 the selection of personal protective equipment will be made by the Site Safety Officer or Criminalist. Until the arrival of a Criminalist at the scene, it will be the responsibility of the Site Safety Officer 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.

Self-Contained Breathing Apparatus (SCBA) 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 SCBA's 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. The use of SCBA requires a minimum of 4 people wearing SCBAs - two inside, two outside for rescue.

Air Purifying Respirators (APRs) are a mask that uses either a canister or dual cartridges to remove contaminants from the atmosphere. These respirators do not protect against IDLH, oxygen deficient, 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.
The following U.S. EPA guideline criteria will be used to select PPE:

Level A - The highest level of respiratory (SCBA), skin and eye protection. This level of protection will not be used by 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 air purifying respirators (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

1. Positive pressure, full face-piece Self-Contained Breathing Apparatus (SCBA), NIOSH approved;

2. Totally encapsulating chemical-protective suit;

3. Nomex (optional);

4. Gloves, outer, chemical-resistant;

5. Gloves, inner, chemical-resistant;

6. Boots, chemical-resistant, steel toe and shank.

7. Nomex (required for initial entry; for other situation, site safety officer will detain)

Level B Equipment

Requires a minimum of 4 people wearing SCBAs. Two inside, two standing by for rescue.

1. Positive pressure, full face-piece (SCBA), NIOSH approved;

2. Hooded chemical-resistant clothing (i.e. Saranex);

3. Gloves, outer, chemical-resistant (nitrile);

4. Gloves, inner, chemical-resistant;

5. Boots, outer, chemical-resistant, steel toe and shank;

6. Boot-covers, outer, chemical-resistant, steel toe and shank;

7. Nomex (optional).

Level C Equipment

1. Full face-piece Air Purifying Respirator with canister, NIOSH approved;

2. Hooded chemical-resistant clothing (i.e. saranex);

3. Gloves, outer, chemical-resistant (nitrile);

4. Gloves, inner, chemical-resistant surgical type vinyl (nitrile);

5. Boots, outer, chemical-resistant, steel toe and shank;

6. Boot-covers, outer, chemical-resistant (disposable);

Level D Equipment

1. Gloves (optional)

2. Safety glasses or goggles.

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

The PPE 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 they are wearing PPE 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 with less toxic materials. If necessary, administrative controls, such as limiting exposure by limiting time on a job is another alternative.

If neither engineering nor administrative controls are possible, then 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 their supervisor and a Mission Support Branch Industrial Hygienist.

Program Administration

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:

- 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 to determine 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

Air Purifying Respirators (APRs) are a mask that uses 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

Self-Contained Breathing Apparatus (SCBA) 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 SCBA's 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

- 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-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 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.

- Sampling containers used in a recent cooking lab, of greater than 5-gallon size, or with large openings (i.e. open buckets), or work 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.

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 will generally not be done. If an urgent need arises, then the area will be ventilated, a PH_3 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 taken, then work can be refused.

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 contaminates 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, then an APR should be required.	If downgrade to APR is permitted, dispose of cartridge after use at that site.
Sampling or opening household sized containers less than 5 gallons in size in a well ventilated area	Air Purifying Respirator (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;
- What the limitations and capabilities of the respirator are;
- 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;
- What the procedures are 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 they have 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 employee was fitted with.
- 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 are required to 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 mg/m^3 oil mist
  - moisture content< dew point of 50 °F @ 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 °F 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 ml household bleach in 1 liter of water)
- 50 ppm iodine solution (1 ml tincture of iodine to 1 liter or water), or
- A commercially prepared disinfectant recommended by the manufacturer.

Then rinse all components in fresh warm water (110°F maximum) and allow to air dry.

Repair and Replacement

Replacement of parts or repairs shall only be done 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°F or above 120 °F. Respirators shall be stored to prevent distortion of the elastomeric parts.

SPECIAL PROBLEMS

Corrective Vision

Employees who wear corrective lenses may either:

- 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 it is not required unless it has been determined by an occupational health physician 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. The physician's determination shall be documented on the Physician's Certification of Employee Respirator Use letter or similar document, singed by the examining physician and provided to the Program Administrator for each employee.

In the event that the Physician finds that an employee has a medical condition that would prevent the use of a negative pressure APR, the Physician will be required to evaluate whether a 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 the National Institute for Occupational Safety and Health.

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 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 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) is 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) is 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 that

- Has or may have the potential to develop a hazardous atmosphere; OR
- Contains materials that could engulf entrants; OR
- Has shape that may entrap entrants; OR
- 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.

R100: Particulate filter (99.97% filter efficiency level) is effective against particulate and oily aerosols for one work shift.

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 was entered: SCBA shall be used until the atmospheric content can be determined to be 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 found to be 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/m^3 (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°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 100°F 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.

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:

Conditions	Concentration measured @70°F	Concentration measured @95°F
Laboratory grade HCl: 37-39% 1 inch opening	10 ppm	Not tested

Consumer grade drain cleaner HCl 10%, 90% inert 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 (Note to Cliff and Htay-please attach link to the next pages until the decontamination section, which should stay a part of the main document).

ESTIMATED CARTRIDGE BREAKTHROUGH TIME FOR THE SCOTT 642-MPC MULTI-PURPOSE TWIN CARTRIDGE MEDIUM WORK RATE, 22 °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
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
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
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 22°C, 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 °C, multiply breakthrough times by 0.8.

For temperatures at 12 °C, 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 (CO_2) 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 A. 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 (see incompatible chemical list, Appendix F, for guidelines).

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.

Assessment

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.

Definitions

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.

<u>Monitoring for Hazards at a Confined Space</u>

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.

DEFINITIONS

Absorption
The movement of one substance into another.

Acid
A 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
A single exposure occurring in a short period of time causing an immediate noticeable symptom or effect.

Air Purifying Respirator (APR)
A 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.

Anhydrous
Compounds free of water.

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

Asphyxiant
A vapor or gas which can cause unconsciousness or death by suffocation.

Auto-ignition
The minimum temperature to which a substance will initiate self-sustained combustion.

Base
A corrosive material which reacts with acids to form a salt and water. A base has a pH greater than 7.

Boiling Point

The temperature at which a liquid changes to a vapor at a given pressure. Usually expressed in degrees Fahrenheit at one 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
A 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
A substance that induces cancer from a chronic exposure.

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

Caustic
A substance that strongly irritates, corrodes, or destroys living tissue.

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

Chemical Hazard
A written program developed and implemented by an employer which sets Plan forth procedures, equipment, personal protective equipment, and work practices that are capable of protecting employees from hazardous chemicals used in the workplace.

Chronic Exposure
An exposure which is recurrent or over an extended period of time.

Clandestine Laboratory
An illicit operation consisting of a sufficient combination of apparatus and chemicals that either have been or could be used in the manufacture of controlled substances.

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

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

Compressed Gas
Any material or mixture which, when enclosed in a container, has an absolute pressure exceeding 40 psi at 70°F or exceeding 140 psi at 130°F.

Confined Space
A space that is large enough and so configured that a person can bodily enter but has limited access or egress, is not designed for human occupancy, and has limited ventilation.

Confined Space Entry Permit
A 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
The process of transferring a hazardous material from its source to people, animals and the environment or equipment.

Control Zones
The areas associated with a clandestine laboratory which divides the site based on safety and degree of hazard.

Corrosive
A 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 criminalist is defined as a forensic scientist, chemist, or criminalist.

Decontamination
The process of removing or neutralizing contaminants from individuals and equipment.

Direct Reading Instruments
A portable devise the measures and displays the concentration of a contaminant or hazardous atmosphere in the environment.

Emergency
A sudden and unexpected event calling for immediate action.

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

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

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

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

Exposure
Any situation arising form a work operation where an employee 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.

Flammable
A chemical property defined by having a flash point less than 140°F.

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

Generator
Any person, company or organization that produces hazardous waste that is subject regulation.

Granules
Dry, course particles of some porous material.

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

Hazard Assessment And Recognition Plan (HARP)

A preprinted form used to document information gathered and to plan for potential hazards associated with clandestine laboratories.

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

Hazard Communication Standard
A 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 to make available information of the chemicals contained in the material safety data sheets.

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

Hazard Warning System
Any 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
Capable of posing an unreasonable risk to health and safety.

Hazardous
A substance or combination of substances which, because of its Material concentration, physical, chemical, or infectious characteristics, may cause injury or death.

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

Immediately Dangerous to Life and Health (IDLH)
A condition that poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent health effects or prevent escape from such an environment.

Incompatible
A term used to describe materials which could cause dangerous reactions from direct contact with one another.

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

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

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

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

Lower Explosive Limit
The minimum amount of fuel in air creating an explosive atmosphere.

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

Melting Point
The temperature at which a solid substance changes to a liquid state.

Mutagen
A chemical capable of damaging chromosomes.

Odor Threshold
The lowest concentration of a substance in air that can be detected by smell.

Oxidizer
A 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. It exists in atmospheres where the percentage of oxygen by volume is less than 19.5%.

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

Permeation
The movement of materials on a molecular level, through intact fabrics or barrier materials.

Permissible Exposure Limit (PEL)
A legally enforceable limit for an average allowable chemical concentration in air that the average healthy worker can be exposed to without the need for PPE.

pH
The indicator or value used to describe how acidic or alkaline a solution or chemical is.

Precursor
A raw material which is essential to the production of a controlled substance and which becomes part of the finished product.

Qualified Person
A person with specific training, knowledge and experience in the area for which they have the responsibility and authority to control (i.e. Site Safety Officer).

Reaction
A chemical transformation or change; the interaction of two or more substances to form new substances.

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

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

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

Sensitizer
A 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)
The maximum average concentration of an airborne contaminant allowed for a continuous 15 minute exposure period.

Site Safety Plan
A written site specific criteria that establishes requirements for protecting the health and safety of responders during all activities at a clan lab.

Solvent

A substance, usually a liquid, into which another substance is dissolved.

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

Synthesis
The formation of complex compounds by the combining of two or more chemicals.

Teratogen
A chemical capable of producing reproductive harm or birth defects.

Threshold Limit Value (TLV)
A term used by the ACGIH to describe the time-weighted-average concentration for a normal eight hour work period to which workers may be repeatedly exposed without adverse effects. The TLV is not legally enforceable.

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

Toxicity
The capacity of a material to produce adverse health effects resulting from overexposure to the material.

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

Vapor
The 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
The ability of chemicals to become a gas or vapor at relatively low temperatures.

Water Reactive
A substance which may spontaneously react or ignite when mixed with water.

Phase IV

STANDARDS FOR CERTIFICATION OF ILLEGAL DRUG LABORATORY REMEDIATION SPECIALIST

This document describes recommended standards for certification, by the Board of Technical Registration or other administrative board in Arizona, of remediation specialists working to remediate residual contamination at illegal drug laboratories from the manufacture of methamphetamine and amphetamine. It has been adapted from Washington State Department of Health guidelines. The reader is referred to the Board of Technical Registration website www.btr.state.az.us/remapp.htm for description of the most similar existing certification program and http://www.btr.state.az.us for a description of the Arizona Revised Statutes (specifically ARS 32-131) covering this existing certification program.

Three levels of certification are recommended: illegal drug laboratory remediation training provider, illegal drug laboratory remediation supervisor and illegal drug laboratory remediation worker. Sixteen hours of training will be required for certification at a worker level, and an additional 8 of training for certification at a supervisor level. Annual worker and supervisor refresher courses will require a minimum of 4 hours of training.

Training provider certification.

(1) Persons wanting to become an illegal drug lab decontamination training provider should obtain approval of instructors and courses by the Board of Technical Registration or other administrative board in Arizona. The types of drug lab decontamination courses approved by the department should be:

(a) Basic worker;

(b) Basic supervisor; and

(c) Refresher worker and supervisor.

(2) Instructor approval should be contingent on the breadth of knowledge and experience required to properly train workers and supervisors. This includes but is not limited to a bachelors degree or higher in the sciences and first-hand experience with remediation of illegal drug laboratories.

(3) Course work approval should be contingent on evaluation of the:

(a) Adequacy and accuracy of content; and

(b) Training techniques.

(4) Applicants for training provider certification should submit a completed training provider application and prescribed fee sixty or more days before the requested approval date.

(5) A training provider application should include:

(a) A completed training provider application form;

(b) A list of all personnel involved in course presentation and a description of their qualifications;

(c) Copies of course handouts;

(d) A detailed description of course content and the amount of time allotted to each major topic;

(e) A description of teaching methods;

(f) A list of all audio-visual materials proposed for use;

(g) A list of two hundred questions for development of an examination; and

(h) Copies of all audio-visual materials proposed for use.

(6) Training provider certification should be valid for a period not to exceed two years from the date of issuance.
(7) Training provider certification should be terminated if the training provider fails to:
(a) Maintain the course content and quality; and
(b) Make changes to a course as required by the Board of Technical Registration or other administrative board in Arizona.

Training provider responsibilities.
(1) Prior to any training, the training provider should:
(a) Notify the Board of Technical Registration or other administrative board in Arizona in writing thirty or more days before training is scheduled to begin. The notification should include the date, time, and address of the location where training will be conducted;
(b) Limit each class to a maximum of thirty participants;
(c) Incorporate into training any required subject matter developed by the Board of Technical Registration or other administrative board in Arizona;
(d) Obtain Board of Technical Registration or other administrative board in Arizona approval in advance of any changes to the training; and
(e) Maintain the course content and quality.
(2) Within ten days after a training is completed, the training provider should provide the Board of Technical Registration or other administrative board in Arizona with a list of the names, addresses, and social security numbers of all persons completing a basic or refresher training course.
(3) The training provider should allow a representative of the Board of Technical Registration or other administrative board in Arizona to attend a training course as an observer.

Training provider certification renewal.
Training providers seeking renewal certification should submit a completed training provider application including prescribed fee to the Board of Technical Registration or other administrative board in Arizona thirty or more days before expiration of the current certificate.

Basic training course content.
Department approved basic worker and supervisor training courses should provide at a minimum:
(1) Information on state and federal laws, rules, and regulations applicable to illegal drug manufacturing or storage sites.
(2) Chemical terminology, classifications, toxicology, and properties related to illegal drug manufacturing.
(3) Illegal drug laboratory characteristics.
(4) First aid.
(5) Adverse health effects of exposure related to illegal drug manufacturing.
(6) Decontamination following chemical exposure.
(7) Techniques and equipment used for decontamination of property.
(8) Handling unknown substances.
(9) State and federal requirements for dealing with hazardous materials related to:
(a) Disposal;
(b) Transportation;

(c) Storage; and
(d) Reporting.

(10) Training for supervisors should include, but not be limited to:
(a) Obtaining necessary information for making site assessments;
(b) Initial site assessment;
(c) Initial site sampling;
(d) Work plan development;
(e) Final site sampling;
(f) Report completion; and
(g) Penalties and liabilities.

(11) Sampling procedures used to determine contamination including but not limited to:
(a) Nonporous surface;
(b) Porous surface;
(c) Air;
(d) Drinking water;
(e) Ground water;
(f) Surface water;
(g) Soil; and
(h) Septic system.
(i) Standards and protocols to ensure accuracy and the ability to produce similar results with repeated sampling;
(j) Proper swabbing techniques to collect a representative sample of the area being sampled; and
(k) Proper care and prudent action to avoid contamination during sampling.
(l) Collection, transportation and storage of samples to assure an unbroken chain-of-custody as described in the American Society of Testing Materials Standard D 4840.

Refresher training course.
An annual refresher training course should be required for workers and supervisors and should provide at a minimum:
(1) A review of the chemistry and toxicology of illegal drug laboratories;
(2) Update of information on chemical detection and remediation procedures and equipment;
(3) Review of regulatory changes and interpretation; and
(4) Other subjects if required by the Board of Technical Registration or other administrative board in Arizona to update information on new technology and procedures.

Worker and supervisor certification.
(1) Applicants seeking certification as a decontamination worker should ensure the Board of Technical Registration or other administrative board in Arizona receives the following within sixty days of completing the basic worker course:
(a) A completed decontamination worker application and prescribed fee;
(b) Evidence of prior completion of HAZWOPER training and annual recertification;
(c) Evidence of successful completion of a Board of Technical Registration or other administrative board sponsored or approved basic decontamination worker course; and
(d) Evidence of passing the basic decontamination worker examination administered by

the Board of Technical Registration or other administrative board with a score of seventy percent or higher.

(2) Applicants seeking certification as a decontamination supervisor should ensure the Board of Technical Registration or other administrative board receives the following within sixty days of completing the basic supervisor course:

(a) A completed decontamination supervisor application and prescribed fee;

(b) Evidence of prior completion of HAZWOPER training and annual recertification;

(c) Evidence of forty or more hours of on-site experience in hazardous material or illegal drug manufacturing or storage site decontamination projects;

(d) Evidence of successful completion of a Board of Technical Registration or other administrative board sponsored or approved basic decontamination supervisor course; and

(e) Evidence of passing the basic decontamination supervisor examination administered by the Board of Technical Registration or other administrative board with a score of seventy percent or higher.

(3) Worker and supervisor certificates are valid for one year from the date of issuance.

(4) Workers and supervisors should make certificates available for inspection at all times during an illegal drug manufacturing or storage site decontamination project.

(5) The certificate may be denied, suspended, or revoked.

Worker and supervisor certification renewal.

(1) Certified workers and supervisors seeking certificate renewal should submit to the Board of Technical Registration or other administrative board:

(a) A completed application form and prescribed fee for certificate renewal;

(b) Evidence of successful completion of a Board of Technical Registration or other administrative board sponsored or approved refresher training course.

(2) Worker and supervisor renewal certification should be valid for one year from the date of issuance.

(3) Workers and supervisors whose certificates have been expired for more than two years should retake the entire basic course.

(4) Supervisors whose certificates have been expired for more than two years should retake the entire basic supervisor course.

Contractor certification.

(1) A contractor may advertise, offer to undertake, or perform decontamination, demolition, or disposal work at an illegal drug manufacturing or storage site only after securing a certificate from the Board of Technical Registration or other administrative board.

(2) Applicants for Board of Technical Registration or other administrative board certification as an authorized contractor, should submit to the department:

(a) Evidence of being licensed, bonded, and insured as a general contractor in the State of Arizona;

(b) Evidence of Board of Technical Registration or other administrative board certification for each employee who will do work on an illegal drug manufacturing or storage site;

(c) Documentation that the contractor has at least one Board of Technical Registration or other administrative board certified supervisor and one Board of Technical Registration or other administrative board certified worker; and

(d) A completed decontamination contractor application form and prescribed fee.

Reciprocity.
(1) The Board of Technical Registration or other administrative board should provide reciprocal certification for contractors, supervisors, and workers trained and certified in another state if standards and training are substantially equivalent to those in Arizona.
(2) Applicants for reciprocity should submit to the Board of Technical Registration or other administrative board:

(a) A completed application form and prescribed fee for the type of certification being requested;

(b) Documentation of specialized training for illegal drug manufacturing or storage site decontamination; and

(c) Evidence of successful completion of HAZWOPER training.

(3) Prior to certificate approval, the applicant may be required to:

(a) Submit additional information;

(b) Successfully complete a refresher course; or

(c) Pass a Board of Technical Registration or other administrative board-administered examination with a score of seventy percent or more.

Certified contractor list.
(1) The Board of Technical Registration or other administrative board should maintain a list of authorized illegal drug manufacturing or storage site decontamination contractors.
(2) The Board of Technical Registration or other administrative board's authorized contractor list should be made available to local health officials and other appropriate agencies semiannually, and to the public upon request.

Arizona State Board of Technical Registration
Drug Lab Cleanup Information Packet Outline

1. Staff assignments
2. Staff activities to date
3. Board action to date
4. Rules and Standards Committee
   a. Members
   b. Role
5. Washington Statutes and Rules
6. Oregon Statutes and Rules
7. Other State license fees
8. Washington & Oregon State training course outline
9. Current BTR thoughts on training

1. **Staff Assignments**

Ronald W. Dalrymple
Executive Director
Administration of Agency and resource to Program Administrator

Melinda K. Baughman
Program Administrator
Daily administration of program
Coordinator of committee activities and committee-Board liaison
Supervision of support staff personnel
Investigation of complaints
Processing of applications
Preparation of program budget recommendations

Betty Hobson
Administrative Secretary
Administrative support to program administrator

2. Staff activities to date

Staff has researched the laws of Washington and Oregon for Cleanup of Clandestine Labs.

The Director and the Program Administrator attended the state contractor training course required by the states of Washington and Oregon.

Staff has met with an Arizona training facility that offers the 40 hour Hazwoper course to see what it would take to implement a two day training course for the Workers and Supervisors that will be on site.

CHET L. PEARSON, P.E.
Principal

EDUCATION: B.S.E. in Civil Engineering, Summa Cum Laude
Arizona State University, 1981
M.S.E. in Civil/Geotechnical Engineering,
Arizona State University, 1983

REGISTRATIONS: Professional Engineer:
Arizona (Civil, Environmental), Colorado (Civil), Florida (Civil), Nevada (Civil),
New Mexico (Civil), Texas (Civil), Utah (Civil), Georgia (Civil)
Registered Environmental Assessor I and II: California
Certified Environmental Manager: Nevada

CERTIFICATIONS: OSHA 40-Hour Training in Hazardous Waste Operations with Annual Updates
American Heart Association First Aid and CPR Training

AFFILIATIONS: Board Member of Arizona State Board of Technical Registration
Arizona Consulting Engineers Association
American Society of Civil Engineers (ASCE)
Arizona Society of Professional Engineers (ASPE)
National Society of Professional Engineers (NSPE)

EMPLOYMENT: Geotechnical and Environmental Consultants, Inc., Tempe, Arizona - (1989 - Present)
Thomas-Hartig & Associates, Inc., Chandler, Arizona - (1985 - 1989)
McClelland Engineers, St. Louis, Missouri - (1983 - 1985)

GENERAL BACKGROUND

Mr. Pearson is a registered professional engineer with over 19 years of professional experience on a wide variety of projects. As a principal and project manager, he has planned, conducted, and completed numerous geotechnical, hydrological, and environmental investigations and studies. Mr. Pearson's broad background has included significant interaction and contact with clients, attorneys, citizen's groups, and governmental agencies that has prepared him to explain complex technical issues in simple and clear terms. He was the first Environmental Engineer appointed by Governor Hull to Arizona's State Board of Technical Registration.

Mr. Pearson's experience on environmental projects includes project planning; emergency responses; compliance audits; Phase I, II, and III Environmental Site Assessments; indoor air quality studies; preparation of Health and Safety Work Plans; directing and conducting field investigations using a various drilling equipment and personnel protective equipment; in situ testing; pumping tests and hydraulic conductivity testing; installation and monitoring of a variety of geotechnical instrumentation systems; engineering evaluation and analyses; computer modeling and programming; underground storage tank removals and corrective actions; air, water, waste, soil and rock sampling and testing; installing and sampling vadose zone and groundwater monitoring wells; hazardous waste characterizations; evaluating sites with contaminated soil and/or groundwater; feasibility studies; recommendations on remedial actions; soil and groundwater remediation; directing, conducting and monitoring of remedial actions; preparation of plans and specifications for remedial actions; design of storage tank and secondary containment systems; preparation of technical reports; documentation for submittal to regulatory agencies; interaction with involved attorneys; obtaining closure from regulatory agencies; reimbursement from state funds; expert witness testimony; and review of other consultant's reports.

CHET L. PEARSON, P.E. - INDIVIDUAL PROJECT EXPERIENCE

Environmental Assessment/Remediation - 8,000+ Acres of Land - Buckeye, Arizona (1998-2002): Principal for a Phase I and II ESA on an 8,000-acre site formerly used for testing heavy earth moving equipment. Site included a vehicle/equipment maintenance area as well a numerous borrow and material processing areas. Issues included former UST areas, wash racks, septic systems, groundwater wells, seepage pits, landfill areas, and ACMs. Directed an extensive Phase II investigation. Developed cost estimates for the excavation and off-site disposal of landfill materials, abatement of ACMs, and the remediation of impacted soils. Directed extensive remedial excavation and off-site disposal of contaminated soils, blasting materials, and landfill materials (over $1 million), and remediation of petroleum-impacted soils by bioventing.

Phase I & II ESAs/UST Corrective Actions - Ten Service Stations - Maricopa and Pinal Counties, Arizona (1991-2002): Principal/Project Manager for Phase I ESAs or UST Compliance Audits on ten service stations. Documented history of current service stations and UST systems, evaluated current compliance status, and documented site histories. Previous UST systems and other environmental issues were found. Performed asbestos surveys on the buildings at several sites. Conducted Phase II ESAs and/or UST removals at these sites. Directed extensive soil and groundwater sampling and testing to delineate the extent of releases. Designed, permitted, implemented, and completed remedial actions. Evaluated various remediation alternatives and designed cost effective measures for differing site conditions. Remedial efforts on soil and/or groundwater included excavation and bioremediation and/or thermal desorption; vapor extraction using thermal and catalytic oxidizers, internal combustion engines, and/or carbon; air sparging; and in situ bioremediation using oxygen release compounds. GEC conducted corrective actions at all ten sites, and ADEQ has issued UST closure letters for eight sites. Provided expert witness testimony on related issues. Remediation is on-going at one site, and a closure request has been made for the last site.

Environmental Assessment/Remediation, 65-Acre Multi-Property Development - Phoenix, Arizona (2000-2002): Principal for comprehensive review of Phase I and II environmental assessments by others. Previous consultant was not making progress in assessing the environmental condition of the Site. Provided recommendations for continuing the Phase II investigation. Directed extensive soil and groundwater investigation. Identified numerous areas of contamination and features to be abandoned. Directed remedial efforts to prepare the Site for development including removal of hazardous ash materials, lead-contaminated soils, buried trash pits, and numerous septic systems.

Site Assessments/Remediation - Five Industrial Subdivisions - Maricopa County, Arizona (1990- 1997): Principal for comprehensive site assessments on multiple vacant lots within five industrial subdivisions. The subdivisions were previously developed with various agricultural properties from dairies to farmhouse complexes to a railroad siding in the late 1800s. Conducted extensive research to document past site usages and to identify potential environmental issues. Directed Phase II ESAs including geophysical surveys, test borings, test pits, and surface soil sampling and testing to evaluate several issues including possible underground fuel tanks, ensilage pits, lagoons, trash pits, septic systems, and wells. Directed remediation of several problems including locating and removing former underground fuel tanks, closing the LUST file, locating and abandoning septic systems, and removing ACMs, surface trash, and debris. The purchaser had an attorney and consultant review GEC's reports, and our client successfully sold all five subdivisions.

Phase I and II ESA - 2.5 Downtown City Blocks - Phoenix, Arizona (1997): Principal for Phase I and II ESA on a large downtown redevelopment project. The site includes two and one-half city blocks within the original townsite of Phoenix. Researched site development extending back to the 1860s. Documented archaeological and other cultural and historical concerns on the site. Researched a variety of special resource issues such as wetlands, endangered species, etc. Developing a cost effective strategy to conduct a staged Phase II ESA to correlate with the owners' development plans. Phase II included a geophysical survey, soil gas survey, hand samples, and test pits. We will remediate any found contamination.

Phase I ESA/Remediation - Manufacturing/Industrial Facility - Peoria, Arizona (1993-1994): Principal for complete site assessment of this 23-acre facility with industrial site usages. Identified former painting and oil storage areas, waste disposal areas, former USTs, and a wash rack. Directed extensive Phase II ESA. Inventoried, characterized, and removed numerous chemical containers. Removed waste oil UST and remediated impacted soils. Remediated other impacted soils. Prepared Phase I, II & III ESA report. Client received closure from ADEQ, and the property was sold.

CHET L. PEARSON, P.E. - INDIVIDUAL PROJECT EXPERIENCE

Environmental Assessment/Geotechnical Investigation - 1,800-Acre Former Mining Facilities - Park City, Utah (1998-1999): Principal for a Phase I and II ESA and preliminary geotechnical investigation on 1,800 acres with numerous historic mining facilities including backfilled shafts and tunnels, open shafts and tunnels, mine waste rock dumps, an ore processing and concentrating facility, former mill sites, slurry lines, tailings ponds, and landfills. Three site areas have been designated as CERCLA facilities. Directed investigation of mine wastes and overburden rock, tailings piles, process residuals with high concentrations of heavy metals, a LUST, large areas of solid waste, floor drains, ACMs, transformers with PCBs, and a municipal water supply. Directed an extensive Phase II investigation. Developed detailed cost estimates for the off-site disposal of residual mining materials, abatement of ACMs, removal and off-site disposal of solid waste and transformers, and the remediation of petroleum-impacted soils. Assisted with development of environmental remediation protocol. Directed preliminary geotechnical investigation.

Emergency Response to a Petroleum/Solvent Spill - New River, Arizona: Principal for the investigation and remediation of an unknown petroleum-based liquid/solvent spill for the Arizona Department of Administration (ADOA) near the bank of the New River. Directed the excavation and removal of the impacted soil and environmental soil sampling and testing during the excavation. Soil samples were preserved using field methanol extraction. Groundwater seeped in to the bottom of the excavation during our sampling, so groundwater may have been impacted by the spill. Met with ADEQ to obtain approval of the groundwater sampling and testing plan, and directed the field investigation. No groundwater impact was found, and ADEQ closed the file on this incident.

Emergency Response Investigation/Remediation - Fungicide Spill, I-10 west of Phoenix, Arizona: Principal for the investigation and remediation of a tanker truck accident and spill on I-10. The fungicide maneb was spilled onto the freeway and adjacent landscaping areas. Worked with ADEQ on the investigation and remedial requirements. Fungicide-affected soil from the landscaping area was excavated and removed from the site. Worked with analytical laboratory to develop a test method to evaluate the spill. Based on our sampling and testing, the impacted soils had been removed to concentrations below the residential soil remediation level, and ADEQ closed the file on this incident.

West Central Phoenix WQARF Site - Phoenix, Arizona: Principal for preliminary assessments and preparation of Sampling and Analysis Workplans for two sites within the West Central Phoenix WQARF Site. Directed historical research to evaluate past site activities, reviewed ADEQ's files on these two facilities, and prepared workplans for additional investigation of the sites with borings, Hydropunch sampling, and the installation and sampling of several groundwater monitoring wells to evaluate these sites for VOCs and metals.

Potential WQARF Site - Industrial Facility - Yuma, Arizona: Principal for investigation of an industrial facility that is under consideration for inclusion in WQARF. A significant plume of PCE has been identified in the groundwater beneath the facility. Reviewed historical documents on past site activities, reviewed previous consultant's reports, and developed investigation workplans to satisfy ADEQ. Negociated access agreements with adjacent property owner. Directed the installation of additional groundwater monitoring wells to characterize the lateral extent of the PCE plume at the groundwater surface. Directed the installation of a nested well to evaluate the vertical extent of PCE in the groundwater. Managed the sampling and testing of the wells and the characterization and disposal of investigation derived wastes contaminated with PCE.

CHET L. PEARSON, P.E. - INDIVIDUAL PROJECT EXPERIENCE

Phase I and II ESA/Risk Assessment - Office/Parking Garage - Phoenix, Arizona (1987-1994): Principal/Project Manager for Phase I and II ESAs and Risk Assessment. Site was previously developed with numerous commercial properties. Documented complete site history back to 1930s. Located several former tenants and interviewed them. Identified three former UST areas. Drilled test borings, installed groundwater monitoring wells, conducted soil and groundwater sampling and testing, and prepared technical report. Directed investigation to evaluate the extent of the release with borings and wells. Conducted risk assessment to leave hydrocarbons in place. Provided expert witness testimony on our findings.

Phase I & II ESA/Remediation - Historical Agricultural Ranch - Glendale, Arizona (1997): Principal for Phase I & II ESA on a historic ranch in Glendale. The ranch included 137 acres of agricultural development and farm fields. Documented site history through interviews with former tenants/owners. Phase II included asbestos surveys, surficial soil sampling and testing in the farm fields, soil sampling and testing in past agricultural chemical storage and vehicle maintenance areas, and exploration for buried trash pits. GEC identified three areas of significant soil contamination missed by a previous consultant. We conducted a lead-based paint survey, demolished and removed structures with ACMs, and remediated impacted soils by excavation and off-site disposal.

Site Assessment/Remediation/Geotechnical Evaluation - 1,310-acre Desert Land - Peoria, Arizona (1992-1996): Principal for site assessment, remediation, and geotechnical/geological evaluation of a large piece of land. We identified a former landing strip on the site used for recreational purposes, several open mines, and some potential historical artifacts. Directed soil sampling and testing near the air strip and on mine tailings. Directed abandonment of several mines and remediation of numerous trash and debris piles. Conducted geotechnical and geological evaluation of the site for future development including researching available geologic records, a site reconnaissance by geologists, excavating numerous test pits, and seismic surveys. Prepared several detailed reports.

Phase I and II ESAs/Compliance Audits/UST Corrective Actions/Remediation - Vehicle Maintenance Facilities - Arizona, Nevada, New Mexico, Utah, Colorado, Texas, California, and Idaho (1996-2001): Principal for conducting various Phase I, II, and III ESAs and compliance services throughout Arizona and the Western U.S. Conducted assessments on developed commercial properties and vacant lots. Conducted compliance audits on existing facilities involving waste characterizations, evaluations of treatment/disposal alternatives, reviewing chemical handling procedures, and developing a corporate policy manual and SPCC Plans. Directed UST removals/corrective actions, removal of hydraulic lifts, excavation of contaminated soils, and soil and groundwater investigations/remediations at several sites.

Soil Investigation/Remediation - Industrial Facility - Chandler, Arizona (1995-1996 & 2002): Principal for investigation of the soils beneath an acids storage tank area. The concrete floor slab had significantly deteriorated, and the client wanted to replace the slab. Directed investigation of the underlying soils, and arsenic-contaminated soils were detected in several areas. Designed remediation program to remove the floor slab and impacted soils, and replace the floor slab while keeping the tank area operational. Directed the excavation of arsenic-contaminated concrete and soil. Successfully remediated the impacted materials, while keeping the tank farm operational. In 2002, ADEQ inspected the manufacturing facility and identifie additional process areas with deteriorated concrete. Worked with client under a consent order with ADEQ to investigate and remediate impacted concrete and underlying soil.

Report Reviews - Unites States (1988-2002): Principal/Project Manager for review of numerous Phase I and II ESA, Asbestos Survey, Remediation, and other reports prepared by other consultants. Mr. Pearson frequently reviews reports for various clients for completeness, technical accuracy, fulfillment of various requirements, recommendations for additional work and for litigation. He has testified in deposition and in court.

Environmental Site Assessments/Remediation - Western U.S. (1986-2002): Principal/Project Manager for assessment of over 1,000 sites throughout the Western U.S. Directed and conducted extensive site history reviews to evaluate environmental issues. Directed and conducted a wide range of Phase II ESAs to evaluate issues and to characterize and delineate the extent of contamination. Designed, permitted, implemented, and completed Phase III ESAs/remediation of impacted soils and groundwater. Consulted with clients and attorneys on involved risks and liabilities. Provided expert witness testimony on the standard of care.

RONALD A. STARLING, P.E., S.E., R.L.S.
STARLING & ASSOCIATES, INC.
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TEMPE, AZ 85281
(480) 517-9803 - FAX (480) 517-9857
WWW.starlingengineering.com
email:rstarling@starlingengineering.com

CURRICULUM VITAE

- Serving since 1978 as a civil and structural engineer, designing a broad spectrum of projects and providing a variety of forensic analyses.

PROFESSIONAL EXPERIENCE:

1980 TO PRESENT: STARLING & ASSOCIATES, INC. Tempe, AZ

PRINCIPAL PARTNER, PRESIDENT since 1998, of this full service structural engineering company, fka RADER-STARLING & ASSOCIATES, an Arizona Corporation; company specializes in:

- Commercial, industrial and residential structures of timber, concrete, masonry and steel building materials.
- Forensic engineering of structural building failures or problems
- Insurance claim investigations
- Building code review

- Compliance studies
- Construction inspections
- Custom residential designs

Current and recently completed projects include industrial and manufacturing, forensic studies and failure investigations, retail, commercial office space, specialty use and custom residential projects. A sampling of these projects follows:

INDUSTRIAL AND MANUFACTURING:

- Hellyer Vista View I; San Jose, California
- Hellyer Vista View II, San Jose, California
- Creekside office/warehouse; San Jose, California
- Fontanoso office/warehouse; San Jose, California
- REW Drywall Products; Peoria, Arizona
- Cottmann Transmission; Tempe, Arizona
- World Resources Building; Phoenix, Arizona

FORENSIC STUDIES AND FAILURE INVESTIGATIONS:

- Roof failure investigation at Shamrock Foods; Phoenix Arizona
- Fire damage assessment at commercial retail center; Mesa, Arizona
- Explosion investigation at Queen Creek Landfill; Queen Creek, Arizona
- Roof failure at Coco's Restaurant; Tempe, Arizona
- Underpinning and soils stabilization at storage facility; Yuma, Arizona
- Renovations of existing roof at Sierra Vista School; Sierra Vista, Arizona
- Roof collapse at New Visions facility, Tempe, Arizona
- Fire damage and renovation at Hammond Street Apartments; Tempe, Arizona
- Water an sewer line failure at La Cresenta Apartments, Tempe, Arizona
- Roof analysis at Verde Valley Guidance Center; Cottonwood, Arizona
- Shoring and renovation to historic Palace Pharmacy, Globe, Arizona.

RETAIL:

- Safeway grocery store at DC Ranch, Scottsdale, Arizona
- Red Mountain retail plaza; Mesa, Arizona
- Fletcher Market Place retail center, Peoria, Arizona
- Deer Valley Pavilions retail center; Peoria, Arizona
- Pacific West Development pads A, B, & D retail center; Scottsdale, Arizona
- Safeway at 83rd Avenue and Lake Pleasant Parkway; Peoria, Arizona.

COMMERCIAL OFFICES:

- Murray Research and Development; Gilroy, California
- Vanni Properties office; Gilroy, California
- Tompkins Court office building: Gilroy, California
- Addition to Subaru car dealership, Phoenix, Arizona
- Empire Machinery tenant improvement, Chandler, Arizona
- Northwest pool and spa building

SPECIALTY USE:

- City of Phoenix Police tactical training village; Phoenix, Arizona
- Greek Orthodox Church; Scottsdale, Arizona
- Numerous commercial water parks and swimming or diving facilities
- Numerous MRI, X-ray, and specialty medical facilities
- Clean room expansion at Flip Chip Technologies; Phoenix, Arizona.
- High Temperature press addition for Rogers Corp., Chandler, Arizona

1978 to 1980 DEPARTMENT OF ENERGY RESEARCH Charlottesville, Virginia

Worked on a gas centrifuge project at the research laboratories for the Engineering Sciences in Charlottesville, primarily testing glass reinforced plastics materials

Curriculum vitae - Ronald A. Starling, P.E.
(Continued)

PROFESSIONAL REGISTRATIONS:

- Arizona Professional Engineer
  Structural - No. 15563
  Civil - No. 15183
  Land Surveyor - No. 16201

- California Civil Engineer - No. 35491
- Nevada Civil Engineer No. 12091
- Utah Civil Engineer - No. 93-265192-2202

PROFESSIONAL ASSOCIATIONS:
(Starling & Associates)

- Structural Engineers Associates of Arizona
- Arizona Consulting Engineers Association President 1999 to 2000
- American Concrete Institute
- National Society of Professional Engineers
- Arizona State Board of Technical Registration Board Member 2001 to present

EDUCATION:

University of Virginia:

- Ms, Civil Engineering - 1980
- BS, Civil Engineering - 1978
- Member Chi Epsilon National Civil Engineering Honor Fraternity

PERSONAL:

- Married since 1983, three children

- Hobbies include flying, skiing, scuba diving

HUTZEL & ASSOCIATES

INDUSTRIAL HYGIENE • SAFETY • ENVIRONMENTAL CONSULTING

Robert Hutzel, CIH, CSP

1626 E. Alica Dr.
Phoenix, Arizona 85042
602-323-0222

Mr. Hutzel has served as an Industrial Hygienist and Environmental Health Specialist since 1970. Certified Industrial Hygienist in Comprehensive Practice by the American Board of Industrial Hygiene and a Certified Safety Professional by the Board of Certified Safety Professionals, he has lectured in the U.S. and Canada on safety, industrial hygiene and hazardous materials issues. In 1998, Mr. Hutzel was appointed by the governor of Arizona to serve on the Arizona OSHA Review Board. Experience and achievements include:

Hutzel & Associates, Industrial Hygiene-Safety-Environmental Consulting, Phoenix, Arizona, Industrial Hygiene Consultant/Owner, 1989 to Present.

- Conduct industrial hygiene surveys in various companies for chemical and noise exposures.
- Develop safety and health programs and conduct program evaluations.
- Conduct ventilation system evaluations and design.
- Perform indoor air quality investigations.
- Direct underground storage tank and hazardous waste site remediations.
- Conduct project design and management of asbestos abatement projects.
- Prepare site safety and health plans and conducted CIH oversight on hazardous material remediation projects.
- Develop and present various safety, industrial hygiene, and hazardous waste/emergency response training programs.

Salt River Project, Phoenix, Arizona
Supervisor, Industrial Hygiene & Hazardous Materials, 1980 to 1989.

- Responsible for developing and implementing corporate industrial hygiene, hazardous waste, and SARA Title III ("Community Right-to-Know Law") programs.
- Supervised four professional industrial hygienists and one secretary.
- Conducted workplace audits to evaluate industrial hygiene programs and recommended actions items to update the programs to reflect the latest technology.

Maricopa County Emergency Planning Committee, 1988-1989

- Mr. Hutzel was Industries Representative on the Maricopa County Emergency Planning Committee established under SARA Title III, Community Right-To-Know. During this time he was instrumental in developing the Emergency Preparedness Plan for Hazardous Chemicals for Maricopa County.

Other Experience:

- Assistant Faculty Member, Arizona State University (1983 to Present)
- Industrial Hygienist, University of Arizona (1978-1979)
- OSHA Compliance Officer, Industrial Commission of Arizona, Division of Occupational Safety & Health.(1976-1978)
- Environmental Health Specialist, U. S. Air Force.

Education

- B.S. Industrial Hygiene, University of Arizona

Certifications

- Certified Industrial Hygienist (#3412)
- Certified Safety Professional (#6523)

Related Continuing Education

- "Asbestos Building Inspector
- "Asbestos Project Designer"
- "40 Hour Hazardous Waste and Emergency Response Operations"
- "Indoor Air Quality and HVAC" Seminar by Jeff Burton
- "Assessing and Remediation of Microbial Contamination in the Indoor Environment"

Published

- American Journal of Industrial Hygiene

Member

- American Conference of Governmental Industrial Hygienists (ACGIH)
- American Industrial Hygiene Association (AIHA)
- American Academy of Industrial Hygiene (AAIH)
- Environmental Information Association (EIA)
- Arizona Chapter of the EIA (Co-Founder and Past President)
- American Indoor Air Quality Council (Advisory Board Member)
- Arizona OSHA Review Board Member (5 Year Governor Appointment)

Professional References

Available upon request

The

American Board of Industrial Hygiene®

ABIH®

AMERICAN BOARD OF INDUSTRIAL HYGIENE ©

organized to improve the practice of Industrial Hygiene proclaims that

Robert L. Hutzel

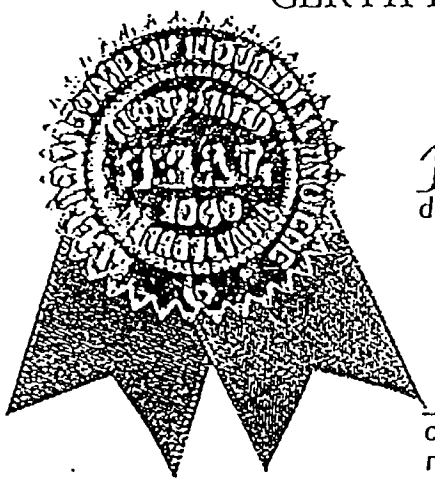
having met all requirements through education, experience, and examination, is hereby certified in the

COMPREHENSIVE PRACTICE
of
INDUSTRIAL HYGIENE

and has the right to use the title and designations

CERTIFIED INDUSTRIAL HYGIENIST

CIH



Dec. 12, 1986
date

Chairman ABIH
Vernon E. Rose, Dr. PH, CIH

3412
certificate number

Secretary ABIH
David M. Trayer, CIH

CHRIS BOYLES
President/Owner

RESPONSIBILITIES

Mr. Boyles is responsible for the management of Spray Systems Environmental and Environmental Response, Inc. He monitors all environmental projects including asbestos and lead abatement, soil remediation, chemical contamination, methamphetamine laboratory clean-up, microbial remediation, UST/LUST site remediation, vapor extraction system installation, brown fields remediation, 24-hour emergency response, excavation and demolition and landfill closure. He works directly with a team of managers including marketing, project management, field operations and accounting to ensure successful completion of all projects. He reviews bids, job performance, project costs, and analyzes scheduling and manpower.

Mr. Boyles has developed innovative guidelines for estimating and project management for cost effectiveness. He has an extensive knowledge of environmental issues, such as chemical releases, asbestos, lead, mold, candelstine drug-labs, and hazardous waste materials in both the commercial and residential markets. Mr. Boyles has established close working relationships with the EPA, OSHA and RCRA agencies.

Mr. Boyles manages offices in Phoenix, Arizona, Los Angeles, California and Houston, TX, and has overall responsibility for the direction and management of the company.

EXPERIENCE

Mr. Boyles founded Spray Systems Environmental in 1983 as an asbestos and lead abatement company. With careful planning and cost management, SSE is listed among the top 10 abatement contractors in the United States. In 1993, he formed Environmental Response, Inc. as a wholly owned subsidiary to broaden the scope of services into other environmental fields. He has been in the environmental construction industry for over 20 years and has successfully managed over 2,500 projects.

REPRESENTATIVE PROJECT EXPERIENCE

- Soil Remediation – 1,200+ projects
- Asbestos and Lead Abatement – 7,500+ projects
- Microbial Remediation – 500+ projects
- 24-Hour Emergency Response – 1,600+ projects
- UST/LUST Site Remediation – 250+ projects
- Chemical Spill Response – 350+ projects
- Vapor Extraction System Installation – 75+ projects
- Drug Lab Clean up – 40+ projects

EDUCATION/CERTIFICATIONS/TRAINING

- Eastern Montana University, Business Administration
- OSHA HAZWOPER Certification
- Certified Indoor Air Quality Investigator Certification
- Hazardous Waste Operations and Emergency Response Certification
- Hazardous Materials Transportation Certification
- Hazardous Materials 8 Hour Refresher Training
- Qualified Asbestos Worker Certification
- Asbestos Air Monitoring Training
- Permit Required Confined Space Training

PROFESSIONAL ASSOCIATIONS

- American Indoor Air Quality Council
- Board Member IAQ Council Certification Panel
- Environmental Information Association
- Arizona Builders Alliance

SA&B
Environmental & Chemical Consultants
Providing Practical Environmental Solutions

PETER F. ALLARD, P.E., CIH
CONSULTING ENGINEER

EMPLOYMENT HISTORY

SA&B Environmental & Chemical Consultants,
Phoenix, Arizona (1987 - Present)
Western Technologies, Inc.,
Phoenix, Arizona (1971-1987)
Motorola, Inc.,
Phoenix, Arizona (1967-1971)
Dickson Electronics,
Scottsdale, Arizona (1965-1967)
Talley Industries,
Mesa, Arizona (1964-1965)
Lockheed Propulsion Corp.,
Redlands, California (1962-1964)
Hercules Powder Company,
Cumberland, Maryland (1960-1962)

PROJECT REFERENCES

- **Arizona Department of Transportation, Phoenix, Arizona, Project Engineer**
  Risk assessment for future use of an industrial site formerly occupied by waste recycling and pesticide distribution/formulation facilities. Site characterization identified residual concentrations of pesticides remaining after site remediation. A risk assessment was conducted using EPA Risk Assessment Guidance for Superfund as allowed in the new Arizona Department of Environmental Quality (ADEQ) soil remediation standards. Site risk for industrial use was accepted by ADEQ and the Arizona Department of Health Services (ADHS) as justification for leaving residual pesticides in place.

- **Hargis + Associates, Confidential Client, Project Engineer**
  Risk assessment to support shutoff of groundwater pump and treat system at a federal Superfund site. Human health risk was estimated for food chain and drinking water exposures from hypothetical agricultural and domestic wells due to chlorinated solvent remaining in groundwater in the study area. The risk assessment methodology used was a combination of EPA procedures and California exposure factors. Results will be presented to EPA Region IX as part of client's request for approval to stop treatment.

- **PureGro Corporation, Tolleson, Arizona, Project Engineer**
  Risk assessment for closure of a 5-acre former pesticide distribution site. Site characterization data obtained by SA&B identified near-surface concentrations of DDX, Toxaphene, and other chlorinated pesticides. A risk assessment was conducted using the EPA *Risk Assessment Guidance for Superfund* as allowed by the new ADEQ interim soil remediation standards. The site risks for projected future industrial use justified leaving residual pesticides in place.

- **Maricopa County Department of Health Services, Airport Office Park**
  Evaluated tenant claims of airport and freeway traffic noise and complaints of peculiar odors. Reviewed heating, ventilation and air conditioning systems, measured noise levels for nuisance of hazardous noise, tested for common indoor air contaminants.

- **Maricopa Medical Center (MMC)**
  Monitoring of potential regional carbon monoxide and hydrogen chloride emissions from a medial waste incinerator. Passive monitors were placed to indicate airborne concentrations at seven outdoor locations on the MMC campus for a two-year period, and occasional indoor air sampling measurements were conducted. Work included interviews with and presentations to County employees on air quality issues.

- **Maricopa County Administration Building**
  Performed indoor air survey addressing air flow, fresh air supply, moisture control, biological contamination and asbestos issues in high-rise office building. Sampling and analysis of air contaminants was conducted throughout the HVAC system.

- **Maricopa County, Project Engineer**
  Provided accelerated air permit review. Work included technical meeting with County and Motorola staff to define, clarify, and resolve permit issues; verification of mass balances and estimated emissions for over 150 process equipment items; compilation of total emissions by chemical for the entire facility and each air control device; preparation of health risk assessment for 40 criteria, volatile organic and hazardous air pollutants; calculation of air quality guideline chemicals which did not have Arizona Ambient Air Quality Guideline concentrations listed by Arizona Department of Health Services; preparation of a summary of the permit; and consultation with County staff on semiconductor processes. The project was completed to the satisfaction of both the County and permit applicant.

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PERSONNEL QUALIFICATIONS

Mr. Allard is a cofounder and Vice President of SA&B. He is responsible for promotional, financial, resource and personnel planning, administration, and development for the firm. He is also involved in performing environmental, chemical and industrial hygiene consulting and project management for projects involving: environmental audits; asbestos surveys; abatement project management; hazardous waste and remedial action investigations; risk assessment; preparation of environmental permit applications; air, indoor air, and odor pollution investigations; industrial hygiene air and noise sampling and investigations; chemical accident investigations and failure analysis; expert testimony; and government and regulatory agency liaison.

EDUCATIONAL BACKGROUND

B.S., Ch.E., Villanova University, 1960
Graduate Study, Ch.E., Arizona State University, 1966-1971

REGISTRATIONS/CERTIFICATIONS

Registered Professional Engineer (Chemical), Arizona, 1968
Certified Industrial Hygienist, 1988

MEMBERSHIPS

Arizona Association of Industrial Science & Environment
  Committee Chair, Soil Subcommittee
American Institute of Chemical Engineers
  (Past Chairman - AZ Section)
Air and Waste Management Association
American Industrial Hygiene Association
American Society for Testing and Materials
  Committee D-22 on Sampling and Analysis of Atmospheres
  Committee D-22.05 Indoor Air
Arizona Comparative Environmental Risk Project Member,
  Human Health Technical Committee
Arizona Department of Environmental Quality
  Soil Cleanup/Standards Policy Task Force
  Arizona Indoor Air Quality Council
Arizona HAZWaste Society Vice President, 1990-92
  Chairmen and Cofounder, HAZWaste '83-'97 Symposium and Hazardous Waste Management in Arizona
Maricopa Association of Governments
  Air Quality Policy Committee
Maricopa County
  Indoor Air Quality Advisory Committee, 1989-90
State Bar of Arizona
  Environmental and Natural Resources Section
Valley Forward
  Past Chairman, Air Quality/Energy Issues Action Group

PUBLICATIONS

Copper Smelter Emissions Testing By EPA Methods, presented at Annual Meeting, Arizona Section, American Institute of Mining Engineers, Tucson, Arizona, December 8, 1975

Rock-Based Devices for Air Pollution Control, Rock Products, Vol. 83, No. 2, 1980

Preparation for RCRA Site Activities: Compliance Inspection and Partial Closure, presented at HAZWaste '83 Symposium, Phoenix, Arizona, November, 1983

Environmental Concerns of Indoor Pollution, presented at the Construction Products Manufacturers Council Construction Marketing Seminar, Dallas, Texas, April 1985

Project and Problem Definition in Building Air Quality Investigations, presented at the Symposium on Design and Protocol for Monitoring Indoor Air Quality, sponsored by the American Society for the Air Pollution Control Association and the American Industrial Hygiene Association, Cincinnati, Ohio, April 1987.

Risk Assessment for Site Corrective Actions, presented at HAZWASTE '92 Symposium, Phoenix, Arizona, November 1992

Determination of Soil Background Composition for Setting Site Cleanup Criteria, presented at HAZWASTE '94 Symposium, Phoenix, Arizona, November 1994

Using the New Arizona Soil Remediation Standards, presented at HAZWASTE '97, Phoenix, Arizona, November 1997

Arizona Department of Health Services

Office of the Director

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JANE DEE HULL, GOVERNOR
CATHERINE R. EDEN, DIRECTOR

November 5, 2002

Melinda K. Baughman
Program Administrator
Board of Technical Registration
1110 W. Washington, Suite 240
Phoenix, Arizona 85007

Ms. Baughman:

This letter is in response to your letter dated October 25, 2002 regarding the Environmental Remediation Rules and Standards Committee.

As requested, I have appointed Will Humble, Chief of the Office of Environmental Health to serve as the Arizona Department of Health Services' representative on this committee. He has extensive knowledge and experience with indoor air quality. Mr. Humble can be reached at 602-230-5941.

If you need anything further, please call me at 602-542-1025.

Sincerely,

Cathy Eden

Catherine R. Eden
Director

CRE:tlm

C: Rose Conner
Liana Martin
Lee Bland
Will Humble

RCW 64.44.030 Unfit for use -- Order -- Notice -- Hearing.
If after the inspection of the property, the local health officer finds that it is contaminated, then the property shall be found unfit for use. The local health officer shall cause to be served an order prohibiting use either personally or by certified mail, with return receipt requested, upon all occupants and persons having any interest therein as shown upon the records of the auditor's office of the county in which such property is located. The local health officer shall also post the order prohibiting use in a conspicuous place on the property. If the whereabouts of such persons is unknown and the same cannot be ascertained by the local health officer in the exercise of reasonable diligence, and the health officer makes an affidavit to that effect, then the serving of the order upon such persons may be made either by personal service or by mailing a copy of the order by certified mail, postage prepaid, return receipt requested, to each person at the address appearing on the last equalized tax assessment roll of the county where the property is located or at the address known to the county assessor, and the order shall be posted conspicuously at the residence. A copy of the order shall also be mailed, addressed to each person or party having a recorded right, title, estate, lien, or interest in the property. The order shall contain a notice that a hearing before the local health board or officer shall be held upon the request of a person required to be notified of the order under this section. The request for a hearing must be made within ten days of serving the order. The hearing shall then be held within not less than twenty days nor more than thirty days after the serving of the order. The officer shall prohibit use as long as the property is found to be contaminated. A copy of the order shall also be filed with the auditor of the county in which the property is located, and such filing of the complaint or order shall have the same force and effect as other lis pendens notices provided by law. In any hearing concerning whether property is fit for use, the property owner has the burden of showing that the property is decontaminated or fit for use. The owner or any person having an interest in the property may file an appeal on any order issued by the local health board or officer within thirty days from the date of service of the order with the appeals commission established pursuant to RCW 35.80.030. All proceedings before the appeals commission, including any subsequent appeals to superior court, shall be governed by the procedures established in chapter 35.80 RCW. [1999 c 292 § 4; 1990 c 213 § 4.]

RCW 64.44.040 City or county options.
The city or county in which the contaminated property is located may take action to condemn or demolish property or to require the property be vacated or the contents removed from the property. The city or county may use an authorized contractor if property is demolished, decontaminated, or removed under this section. No city or county may condemn or demolish property pursuant to this section until all procedures granting the right of notice and the opportunity to appeal in RCW 64.44.030 have been exhausted. [1999 c 292 § 5; 1990 c 213 § 5.]

RCW 64.44.050 Decontamination by owner -- Requirements.
An owner of contaminated property who desires to have the property decontaminated shall use the services of an authorized contractor unless otherwise authorized by the local health officer. The contractor shall prepare and submit a written work plan for decontamination to the local health officer. The local health officer may charge a reasonable fee for review of the work plan. If the work plan is approved and the decontamination is completed and the property is retested according to the plan and properly documented, then the health officer shall allow reuse of the property. A release for reuse document shall be recorded in the real property records indicating the property has been decontaminated in accordance with rules of the state department of health. [1999 c 292 § 6; 1990 c 213 § 6.]

RCW 64.44.060
Certification of contractors -- Denial, suspension, or revocation of certificate -- Duties of department of health -- Decontamination account.
(1) A contractor may not perform decontamination, demolition, or disposal work unless issued a certificate by the state department of health. The department shall establish performance standards for contractors by rule in accordance with chapter 34.05 RCW, the administrative procedure act. The department shall train and test, or may approve courses to train and test, contractors and their employees on the essential elements in assessing property used as an illegal drug manufacturing or storage site to determine hazard reduction measures needed, techniques for adequately reducing contaminants, use of personal protective equipment, methods for proper decontamination, demolition, removal, and disposal of contaminated property, and relevant federal and state regulations. Upon successful completion of the training, the contractor or employee shall be certified.

(2) The department may require the successful completion of annual refresher courses provided or approved by the department for the continued certification of the contractor or employee.

(3) The department shall provide for reciprocal certification of any individual trained to engage in decontamination, demolition, or disposal work in another state when the prior training is shown to be substantially similar to the training required by the department. The department may require such individuals to take an examination or refresher course before certification.

(4) The department may deny, suspend, or revoke a certificate for failure to comply with the requirements of this chapter or any rule adopted pursuant to this chapter. A certificate may be denied, suspended, or revoked on any of the following grounds:

WASHINGTON DRUG LAB LAWS

RCW 64.44.005 Legislative finding.
The legislature finds that some properties are being contaminated by hazardous chemicals used in unsafe or illegal ways in the manufacture of illegal drugs. Innocent members of the public may be harmed by the residue left by these chemicals when the properties are subsequently rented or sold without having been decontaminated.

RCW 64.44.010 Definitions.
The words and phrases defined in this section shall have the following meanings when used in this chapter unless the context clearly indicates otherwise.

(1) **"Authorized contractor"** means a person who decontaminates, demolishes, or disposes of contaminated property as required by this chapter who is certified by the department as provided for in RCW 64.44.060.

(2) **"Contaminated" or "contamination"** means polluted by hazardous chemicals so that the property is unfit for human habitation or use due to immediate or long-term hazards. Property that at one time was contaminated but has been satisfactorily decontaminated according to procedures established by the state board of health is not "contaminated."

(3) **"Hazardous chemicals"** means the following substances used in the manufacture of illegal drugs: (a) Hazardous substances as defined in RCW 70.105D.020, and (b) precursor substances as defined in RCW 69.43.010 which the state board of health, in consultation with the state board of pharmacy, has determined present an immediate or long-term health hazard to humans.

(4) **"Officer"** means a local health officer authorized under chapters 70.05, 70.08, and 70.46 RCW.

(5) **"Property"** means any property, site, structure, or part of a structure which is involved in the unauthorized manufacture or storage of hazardous chemicals. This includes but is not limited to single-family residences, units of multiplexes, condominiums, apartment buildings, boats, motor vehicles, trailers, manufactured housing, or any shop, booth, or garden.

Finding -- Intent -- 1999 c 292: "The legislature finds that the contamination of properties used for illegal drug manufacturing poses a threat to public health. The toxic chemicals left behind by the illegal drug manufacturing must be cleaned up to prevent harm to subsequent occupants of the properties. It is the intent of the legislature that properties are decontaminated in a manner that is efficient, prompt, and that makes them safe to reoccupy." [1999 c 292 § 1.]

Effective date -- 1990 c 213 §§ 2, 12: "Sections 2 and 12 of this act are necessary for the immediate preservation of the public peace, health, or safety or support of the state government and its public institutions, and shall take effect on the effective date of the 1989-91 supplemental omnibus appropriations act (SSB 6407) [April 23, 1990] if specific funding for this act is provided therein." [1990 c 213 § 17.]

RCW 64.44.020 Reporting -- Warning -- Notice -- Duties of local health officer.
Whenever a law enforcement agency becomes aware that property has been contaminated by hazardous chemicals, that agency **shall report the contamination to the local health officer.** The local health officer **shall post a written warning on the** premises within one working day of notification of the contamination and shall inspect the property within fourteen days after receiving the notice of contamination. The warning shall inform the potential occupants that hazardous chemicals may exist on, or have been removed from, the premises and that entry is unsafe. If a property owner believes that a tenant has contaminated property that was being leased or rented, and the property is vacated or abandoned, then the property owner shall contact the local health officer about the possible contamination. Local health officers or boards may charge property owners reasonable fees for inspections of suspected contaminated property requested by property owners.

A local health officer may enter, inspect, and survey at reasonable times any properties for which there are reasonable grounds to believe that the property has become contaminated. If the property is contaminated, the local health officer shall post a written notice declaring that the officer intends to issue an order prohibiting use of the property as long as the property is contaminated.

Local health officers must report all cases of contaminated property to the state department of health. The department may make the list of contaminated properties available to health associations, landlord and realtor organizations, prosecutors, and other interested groups. The department shall promptly update the list of contaminated properties to remove those which have been decontaminated according to provisions of this chapter.

The local health officer may determine when the services of an authorized contractor are necessary.

WASHINGTON ADMINISTRATIVE CODE
for
DRUG LAB ASSESSMENT, CLEANUP and DECONTAMINATION

Chapter 246-205 WAC

DECONTAMINATION OF ILLEGAL DRUG MANUFACTURING OR STORAGE SITES

Last Update: 6/29/01

WAC SECTIONS

(a) Failing to perform decontamination, demolition, or disposal work under the supervision of trained personnel;

(b) Failing to file a work plan;

(c) Failing to perform work pursuant to the work plan;

(d) Failing to perform work that meets the requirements of the department;

(e) The certificate was obtained by error, misrepresentation, or fraud; or

(f) If the person has been certified pursuant to RCW 74.20A.320 by the department of social and health services as a person who is not in compliance with a support order or a *residential or visitation order. If the person has continued to meet all other requirements for reinstatement during the suspension, reissuance of the license or certificate shall be automatic upon the department's receipt of a release issued by the department of social and health services stating that the person is in compliance with the order.

(5) A contractor who violates any provision of this chapter may be assessed a fine not to exceed five hundred dollars for each violation.

(6) The department of health shall prescribe fees as provided for in RCW 43.70.250 for the issuance and renewal of certificates, the administration of examinations, and for the review of training courses.

(7) The decontamination account is hereby established in the state treasury. All fees collected under this chapter shall be deposited in this account. Moneys in the account may only be spent after appropriation for costs incurred by the department in the administration and enforcement of this chapter. [1999 c 292 § 7; 1997 c 58 § 878; 1990 c 213 § 7.]

RCW 64.44.070 Rules and standards -- Authority to develop.
(1) The state board of health shall promulgate rules and standards for carrying out the provisions in this chapter in accordance with chapter 34.05 RCW, the administrative procedure act. The local board of health and the local health officer are authorized to exercise such powers as may be necessary to carry out this chapter. The department shall provide technical assistance to local health boards and health officers to carry out their duties under this chapter.

(2) The department shall adopt rules for decontamination of a property used as an illegal drug laboratory and methods for the testing of ground water, surface water, soil, and septic tanks for contamination. The rules shall establish decontamination standards for hazardous chemicals, including but not limited to methamphetamine, lead, mercury, and total volatile organic compounds. [1999 c 292 § 8; 1990 c 213 § 9.]

RCW 64.44.080 Civil liability -- Immunity.
Members of the state board of health and local boards of health, local health officers, and employees of the department of health and local health departments are immune from civil liability arising out of the performance of their duties under this chapter, unless such performance constitutes gross negligence or intentional misconduct. [1990 c 213 § 10.]

RCW 64.44.900 Application -- Other remedies.
This chapter shall not limit state or local government authority to act under any other statute, including chapter 35.80 or 7.48 RCW. [1990 c 213 § 11.]

RCW 64.44.901 Severability -- 1990 c 213.
If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected. [1990 c 213 § 14.]

WAC 246-205-001 **Purpose and authority.** (1) This chapter is adopted to protect the public's health, safety, and welfare by establishing standards, procedures, and responsibilities for:

(a) The certification of contractors and their employees authorized to perform decontamination of illegal drug manufacturing or storage sites; and

(b) Regulating the occupancy and use of property where hazardous chemicals or chemical residues commonly associated with the manufacture of illegal drugs are or may be present.

(2) The statutory authority for the adoption of this chapter is chapter 64.44 RCW.

(a) Contractor certification rules are jointly adopted by the state board of health and the department of health; and

(b) Rules in this chapter pertaining to local health officers' responsibilities are adopted by the state board of health.

(3) This chapter does not apply to industrial sites where a person's manufacturing process uses a hazardous chemical when licensed or regulated by state or federal agencies.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-001, filed 4/29/92, effective 5/30/92. Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-001, filed 1/24/91, effective 4/1/91.]

WAC 246-205-010 **Definitions.** For the purposes of this chapter, the following words and phrases shall have the following meanings unless the content clearly indicates otherwise.

(1) **"Authorized contractor"** means any person or persons:

(a) Registered under chapter 18.27 RCW; and

(b) Certified by the department to decontaminate, demolish, or dispose of contaminated property as required by chapter 64.44 RCW and this chapter.

(2) **"Basic course"** means a training course which has been sponsored or approved by the department for workers and supervisors who perform or supervise decontamination on illegal drug manufacturing or storage sites.

(3) **"Certificate"** means a department issued written approval under this chapter.

(4) **"Certified"** means a person who has department issued written approval under this chapter.

(5) **"Contaminated" or "contamination"** means polluted by hazardous chemicals so that the property is unfit for human habitation or use due to immediate or long-term hazards. Property that at one time was contaminated but has been satisfactorily decontaminated according to procedures established by the state board of health is not "contaminated."

(6) **"Decontamination"** means the process of reducing levels of known contaminants to the lowest practical level using currently available methods and processes.

(7) **"Department"** means the Washington state department of health.

(8) **"Disposal of contaminated property"** means the disposition of contaminated property under the provisions of chapter 70.105 RCW.

(9) **"Hazardous chemicals"** means the following substances used in the manufacture of illegal drugs:

(a) Hazardous substances as defined in RCW 70.105D.020; and

(b) Precursor substances as defined in RCW 69.43.010 which the state board of health, in consultation with the state board of pharmacy, has determined present an immediate or long-term health hazard to humans.

(10) **"Illegal drug manufacturing or storage site"** means any property where a person illegally manufactures or stores a controlled substance or a law enforcement agency or the property owner believes a person illegally manufactured or stored a controlled substance.

(11) **"Initial site assessment"** means the first evaluation of a property to determine the nature and extent of observable damage and contamination.

(12) **"List of contaminated properties"** means a list of properties contaminated by illegal drug manufacturing or the storage of hazardous chemicals.

(13) **"Local department"** means the jurisdictional local health department or district.

(14) **"Local health officer"** means a health officer or authorized representative as defined under chapters 70.05, 70.08, and 70.46 RCW.

(15) **"Person"** means an individual, firm, association, copartnership, political subdivision, government agency, municipality, industry, public or private corporation, or other entity.

(16) **"Posting"** means attaching a written or printed announcement conspicuously on property which may be, or is determined to be, contaminated by illegal drug manufacturing or the storage of a hazardous chemical.

(17) **"Property"** means any site, lot, parcel of land, structure, or part of a structure involved in the illegal manufacture of a drug or storage of a hazardous chemical including but not limited to:

(a) Single-family residences;

(b) Units or multiplexes;

(c) Condominiums;

(d) Apartment buildings;

(e) Motels and hotels;

(f) Boats;

(g) Motor vehicles;

(h) Trailers;

(i) Manufactured housing;
(j) Any ship, booth, or garden; or
(k) Any site, lot, parcel of land, structure, or part of a structure that may be contaminated by previous use.
(18) "Property owner" means a person with a lawful right of possession of the property by reason of obtaining it by purchase, exchange, gift, lease, inheritance, or legal action.
(19) "Refresher course" means a department sponsored or approved biennial training course for decontamination workers and supervisors. An approved refresher course:
(a) Reviews the subjects taught in the initial training course; and
(b) Includes updated information on emerging decontamination technology.
(20) "Storage site" means any property used for the storage of illegally manufactured controlled substances or hazardous chemicals.
(21) "Subcontractor" means a person hired by an authorized contractor for the purpose of providing on-site services.
(22) "Supervisor" means a person employed by an authorized contractor who is on site during the decontamination of an illegal drug manufacturing or storage site and who is responsible for the activities performed.
(23) "Worker" means a person employed by an authorized contractor who performs decontamination of an illegal drug manufacturing or storage site.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-010, filed 4/29/92, effective 5/30/92. Statutory Authority: RCW 64.44.060 and 64.44.070. 92-02-017 (Order 223SB), § 246-205-010, filed 12/23/91, effective 1/23/92. Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-010, filed 1/24/91, effective 4/1/91.]

DECONTAMINATION CONTRACTOR CERTIFICATION

WAC 246-205-020 Authorized contractor services. (1) Persons performing or causing to be performed any decontamination, demolition, or disposal of contaminated property shall use the services of an authorized contractor.
(2) Persons advertising or offering to undertake or perform any work necessary to decontaminate properties shall first comply with these rules and secure a certificate from the department under RCW 64.44.060 and this chapter.
[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-020, filed 1/24/91, effective 4/1/91.]

WAC 246-205-030 Courses for training workers and supervisors. The department shall:
(1) Train, test, or approve courses to train and test the authorized contractor's workers and supervisors on the essential elements in assessing and decontaminating property used as an illegal drug manufacturing or storage site;
(2) Require a biennial refresher course.
[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-030, filed 1/24/91, effective 4/1/91.]

WAC 246-205-040 Training course approval. (1) Persons having department approval may sponsor basic and refresher worker and supervisor training courses.
(2) Training course approval shall be contingent on department evaluation of:
(a) The breadth of knowledge and experience required to properly train workers or supervisors;
(b) Adequacy and accuracy of content; and
(c) Training techniques.
(3) Department approved training courses shall provide at a minimum, information on:
(a) Rules and regulations:
(i) Chapters 69.43 and 69.50 RCW;
(ii) Federal Occupational Health and Safety Act and Washington Industrial Safety and Health Act requirements.
(b) Chemical terminology and classifications:
(i) Definitions, physical and chemical properties, class characteristics and hazards, special cases;
(ii) Equipment such as heating mantle, condenser, glassware;
(iii) Concepts such as acid, base, and pH;
(iv) Solvents;
(v) Metals and salts;
(vi) Corrosives;
(vii) Precursor substances;
(viii) By-products and contaminants;
(ix) Poisons such as cyanide and phosphine.
(c) Surface properties of chemicals:
(i) Absorption;
(ii) Adsorption;
(iii) Chemical bonding;
(iv) Specific chemicals such as 1-phenyl-2-propanone and phenylacetic acid.

(d) Illegal drug laboratories:
(i) Laboratory types including:
(A) Methamphetamine/Amphetamine;
(B) Hallucinogens;
(C) Others such as cocaine and opiates.
(ii) Chemicals;
(iii) Equipment;
(iv) An overview of synthetic processes used; and
(v) Booby traps.
(e) Health effects:
(i) General:
(A) Effects of exposure to classes of chemicals;
(B) Use of literature such as *Material Safety Data Sheet* and *Chemical Hazards Handbook.*
(ii) Toxicology:
(A) Routes of exposure; and
(B) Exposure limits such as time weighted averages and threshold limit value.
(iii) Symptomatology; and
(iv) First aid.
(f) Incompatibility of chemicals related to clean-up:
(i) General concepts such as heat generation and poisonous gas formation; and
(ii) Specific hazards such as lithium, aluminum hydride and water, phosphorous and air.
(g) Decontamination:
(i) Structures and vehicles including cars and boats, covering:
(A) Different techniques and required equipment;
(B) Applications of specific clean-up techniques using hypothetical case examples and correlating site status with appropriate techniques; and
(C) Decision making about and prioritization of techniques based upon case-specific information.
(ii) Contents, specifically removal vs. cleaning; and
(iii) Personal decontamination of crew members prior to leaving a decontamination site.
(h) Handling of contaminated materials:
State/federal requirements for dealing with hazardous chemicals specific to:
(i) Disposal;
(ii) Transportation; and
(iii) Storage.
(i) Reporting requirements.
(j) Site characterization which shall be required for supervisors only:
How to acquire and review existing site specific information including:
(i) Source of data from health department, property owner, law enforcement, or ecology department;
(ii) Site walk-through and assessment;
(iii) Sampling before and after cleanup including:
(A) Who;
(B) When;
(C) What;
(D) How; and
(E) Where.
(k) Recordkeeping and reporting which shall be required for supervisors only:
(i) Initial site assessment;
(ii) Obtaining necessary information;
(iii) Initial site testing;
(iv) Workplan including:
(A) Scope;
(B) Content; and
(C) Format.
(v) Final site testing;
(vi) Report completion;
(vii) Other responsibilities of authorized contractors;
(viii) Penalties and liability.
(4) Sponsors of basic and refresher training courses proposed for department approval shall submit:
(a) Course location and fees;
(b) Copies of course handouts;

(c) A detailed description of course content and the amount of time allotted to each major topic;
(d) A description of teaching methods to be utilized and a list of all audio-visual materials;
(e) A list of all personnel involved in course preparation and presentation and a description of their qualifications;
(f) When specifically requested by the department, copies of all audio-visual materials proposed for utilization; and
(g) A list of two hundred questions for development of an examination.
(5) Sponsors seeking initial and renewal department approval of training courses shall:
(a) Apply on forms provided by the department;
(b) Submit to the department completed application with the required fee as specified under WAC 246-205-990;
(c) Ensure initial course approval applications are received by the department sixty or more days before the requested approval date; and
(d) Ensure training course renewal applications are received by the department thirty or more days before expiration of the current approval.
(6) The department shall:
(a) Approve basic and refresher training courses;
(b) Issue the course sponsor an approval valid for two years from the date of issuance;
(c) Require additional subjects to be taught to update information on new technology and determine the amount of time to be allotted to adequately cover these subjects;
(d) Provide a detailed outline of subject matter developed by the department to the sponsor for required incorporation into the training course.
(7) The course sponsor shall provide the department with a list of the names, addresses, and Social Security numbers of all persons completing a basic or refresher training course ten days or less after a course is completed.
(8) The course sponsor shall:
(a) Notify the department in writing thirty or more days before a training course is scheduled to begin; and
(b) Include the date, time, and address of the locations where training will be conducted; and
(c) Obtain department approval in advance for any changes to a training course.
(9) A department representative may, at the department's discretion, attend a training course as an observer to verify the course sponsor conducts the training course in accordance with the program approved by the department.
(10) Course sponsors conducting training outside the state of Washington shall:
(a) Reimburse the department at current state of Washington per diem and travel allowance rates for travel expenses associated with department observance of the training courses; and
(b) Submit reimbursement to the department within thirty days of receipt of the billing notice.
(11) The training course sponsor shall limit each class to a maximum of thirty participants.
(12) The department may terminate the training course approval if in the department's judgment the sponsor fails to:
(a) Maintain the course content and quality as initially approved;
(b) Make changes to a course as required by the department.

[Statutory Authority: RCW 64.44.060 and 64.44.070. 92-02-017 (Order 223SB), § 246-205-040, filed 12/23/91, effective 1/23/92. Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-040, filed 1/24/91, effective 4/1/91.]

WAC 246-205-050 Worker and supervisor certification. (1) Applicants seeking an initial certificate as a decontamination worker shall submit to the department:
(a) A completed application on a form provided by the department;
(b) A fee as prescribed in WAC 246-205-990; and
(c) Evidence of successful completion of:
(i) Eighty or more hours of hazardous material training satisfying the requirements of WAC 296-62-3040; and
(ii) A department sponsored or approved decontamination worker training course.
(2) Applicants seeking an initial certificate as a decontamination supervisor shall submit to the department:
(a) Evidence of a valid and current Washington state decontamination worker certificate;
(b) Evidence of forty or more hours of on-site experience in hazardous material or illegal drug manufacturing or storage site decontamination projects;
(c) A completed application on a form provided by the department;
(d) A fee as prescribed in WAC 246-205-990; and
(e) Evidence of successful completion of a department sponsored or approved decontamination supervisor training course.
(3) Applicants for department certification shall:
(a) Ensure the completed application is received by the department sixty or less days after the completion of the course; or
(b) Pass an examination administered by the department with a score of seventy percent or more.
(4) Persons shall supervise and perform decontamination work only following issuance of the certificate, valid for two years from the date of issuance.
(5) Persons shall make certificates available for inspection at all times during an illegal drug manufacturing or storage site

decontamination project.

(6) The department may deny, suspend, or revoke a person's certificate as described under WAC 246-205-110.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-050, filed 1/24/91,

WAC 246-205-060 Worker and supervisor certificate renewal. (1) Certified workers and supervisors seeking a renewal certificate shall submit to the department:

(a) A completed application for certificate renewal on a form provided by the department;

(b) A fee as prescribed in WAC 246-205-990;

(c) Evidence of successful completion of a department sponsored or approved refresher training course. Refresher training shall include:

(i) A thorough review of the subjects required under WAC 246-205-030;

(ii) Update of information on state-of-the-art procedures and equipment;

(iii) Review of regulatory changes and interpretation; and

(iv) Other subjects if required by the department to update information on new technology and procedures.

(2) Workers whose certificates have been expired for more than two years shall retake the entire basic course. Supervisors whose certificates have been expired for more than two years shall retake the entire basic supervisor's course.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-060, filed 1/24/91, effective 4/1/91.]

WAC 246-205-070 Authorized contractor certification. (1) A contractor may perform decontamination, demolition, or disposal work at an illegal drug manufacturing or storage site only after the department issues the contractor a certificate.

(2) The department shall not require companies and persons providing only initial site assessment, sample collection, transportation, and testing services for drug laboratory decontamination contractors to be certified or trained under this chapter.

(3) Applicants for department certification as an authorized contractor, shall submit to the department:

(a) Evidence of being licensed, bonded, and insured as a general contractor under the provisions of chapter 18.27 RCW.

(b) Evidence of successful completion of specialized training for each employee who will do work on an illegal drug manufacturing or storage site;

(c) Documentation that the contractor has at least one department certified supervisor;

(d) A completed application on a form provided by the department; and

(e) A fee as prescribed in WAC 246-205-990.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-070, filed 1/24/91, effective 4/1/91.]

WAC 246-205-080 Reciprocity. (1) The department may provide reciprocal certification for contractors, supervisors, and workers trained and certified in another state if standards and training are substantially equivalent to those of this chapter.

(2) Applicants for reciprocity shall submit to the department:

(a) A completed application on a form provided by the department;

(b) Documentation of specialized training for illegal drug manufacturing or storage site decontamination;

(c) Evidence of successful completion of training required by Federal Occupational Safety and Health Act, Washington Industrial Safety and Health Act regulations, and WAC 296-62-3040; and

(d) A fee as prescribed in WAC 246-205-990.

(3) After reviewing the application, the department may issue the applicant a certificate or require:

(a) Additional information;

(b) A refresher course; or

(c) A department-administered examination.

[Statutory Authority: RCW 64.44.060 and 64.44.070. 92-02-017 (Order 223SB), § 246-205-080, filed 12/23/91, effective 1/23/92. Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-080, filed 1/24/91, effective 4/1/91.]

WAC 246-205-090 On-site supervision. (1) During decontamination, demolition, or disposal of contaminated property at illegal drug manufacturing or storage sites, a contractor employed supervisor meeting the qualifications required in this chapter shall be on site and responsible for the activities performed.

(2) The contractor employed supervisor shall, while on site, make available for inspection, department provided certification attesting to the supervisor's training and credentials.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-090, filed 1/24/91, effective 4/1/91.]

WAC 246-205-100 Performance standards. Authorized contractors and their employees working at a decontamination site shall, at a minimum, meet the following performance standards:

(1) File a workplan with and obtain approval of the local health department;

(2) Perform work in accordance with the approved workplan;

(3) Perform work meeting the requirements of state and local building codes;

(4) Comply with applicable Federal Occupational Safety and Health Act and Washington Industrial Safety and Health Act

regulations and requirements;

(5) Comply with the requirements of chapter 70.105 RCW and chapter 173-303 WAC;

(6) Comply with the requirements of applicable department of ecology and Environmental Protection Agency regulations;

(7) Comply with applicable contractor regulations;

(8) Notify the state and local jurisdictional health department of all work performed within ten days after completion of the project;

(9) Perform all decontamination work only with department certified workers and supervisors; and

(10) Comply with all other applicable laws and regulations.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-100, filed 1/24/91, effective 4/1/91.]

WAC 246-205-110 Denial, suspension, revocation of certification, and civil penalties. (1) The department shall deny an initial, renewal, or reciprocal illegal drug manufacturing or storage site decontamination worker, supervisor, or contractor certificate if the applicant fails to meet the requirements of this chapter.

(2) The department may take disciplinary action against a worker, supervisor, or contractor if the following occurs:

(a) Failure to comply with the requirements of chapter 64.44 RCW to include the performance standards or any rule adopted under chapter 64.44 RCW and this chapter;

(b) Failure of a worker or supervisor to make certificates available for inspection on site; or

(c) Committing fraud or misrepresentation in:

(i) Applying for certification;

(ii) Seeking approval of a workplan; or

(iii) Documenting completion of the work to the local health department.

(3) The department may take disciplinary action against a decontamination worker, supervisor, or contractor including, but not limited to, denial, suspension, or revocation of certification.

(4) The department may impose against a contractor a civil penalty not to exceed five hundred dollars, for each violation in addition to or in lieu of certification denial, suspension, or revocation pursuant to this rule. Each day the violation continues shall be considered a separate violation.

(5) Adjudicative proceedings are governed by chapter 34.05 RCW, the Administrative Procedure Act, chapter 246-08 WAC, and this chapter.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-110, filed 1/24/91, effective 4/1/91.]

WAC 246-205-120 Authorized contractor certification list. The department shall maintain a list of authorized illegal drug manufacturing or storage site decontamination contractors. The department's authorized contractor list shall be made available to local health officials and other appropriate agencies semi-annually, and to the public upon request.

[Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-120, filed 1/24/91, effective 4/1/91.]

LOCAL HEALTH OFFICER RESPONSIBILITIES

WAC 246-205-520 Posting of property. (1) Within one working day of notification by a law enforcement agency or property owner that a property may be contaminated by hazardous chemicals, the local health officer shall notify the public of the potential contamination by causing a posting of a notice on the premises.

(2) The local health officer's initial notice shall:

(a) Warn the public that entry to the property may be unsafe; and

(b) Not declare the property unfit for use unless in the local health officer's opinion an immediate public health threat exists.

(3) If, in the local health officer's opinion, an immediate public health threat exists, the local health officer shall cause a posting of an order prohibiting use of all or portions of the property as required under WAC 246-205-560.

(4) The local health officer shall cause the posting, but, based on applicable local regulations or agreements, actual physical attachment of the written notice to the property may be effected by the:

(a) Health officer;

(b) Law enforcement personnel;

(c) Fire department personnel; or

(d) Other local health officer designee.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-520, filed 4/29/92, effective 5/30/92.]

WAC 246-205-530 Environmental assessment. (1) Within fourteen days after a law enforcement agency or property owner notifies the local health officer of potential property contamination, the local health officer shall cause an inspection of the property to commence. To enable the local health officer to determine contamination, the property inspection shall include an acquisition of data such as evidence of hazardous chemical use or storage on site, the presence of chemical stains, or the presence of glassware or other paraphernalia associated with the manufacture of illegal drugs.

(2) As part of the property's inspection, the local health officer shall request copies of any law enforcement reports, forensic

chemist reports, and any department of ecology hazardous material transportation manifests needed to evaluate:

(a) The length of time a person used the property as an illegal drug manufacturing or storage site;

(b) The size of the site actually used for the manufacture or storage of illegal drugs;

(c) What chemical process was involved in the manufacture of illegal drugs;

(d) What chemicals were removed from the scene; and

(e) The location of the illegal drug manufacturing or storage site in relation to the habitable areas of the property.

(3) The local health officer may coordinate the property's inspection with other appropriate agencies. At the request of the local health officer, the Washington state department of ecology may conduct an environmental assessment and may sample the property's ground water, surface water, septic tank water, soil, and other media as necessary to enable the local health officer to evaluate the long-term public health threats.

(4) If the local health officer determines law enforcement and ecology documents do not provide enough data to determine whether the property is contaminated, the local health officer may conduct a site visit or use other methods of obtaining information, to include a review of the analytical results obtained through sampling of the property by an authorized contractor or by the local health officer.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-530, filed 4/29/92, effective 5/30/92.]

WAC 246-205-540 Evaluation. (1) In making a determination of contamination, the local health officer shall follow guidelines developed by the Washington state department of health or other more stringent guidelines as deemed appropriate. If the local health officer determines that a contaminant is present for which no guidelines exist, and further finds that the contaminant presents a potential immediate or long term health hazard, then the local health officer shall find that the property is unfit for use.

(2) If designated unfit for use, the local health officer shall cause a posting of an order prohibiting use of all or portions of the property as required under WAC 246-205-560.

(3) If the local health officer determines the property is not contaminated and is fit for use, the local health officer shall document the findings for future use. The local health officer's documentation shall include:

(a) Findings;

(b) Conclusions;

(c) Name of the property owner;

(d) Mailing and street address of the property owner;

(e) Parcel identification number and legal description of the property; and

(f) Clear directions for locating the property.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-540, filed 4/29/92, effective 5/30/92.]

WAC 246-205-550 Reporting. (1) When property is determined unfit for use, the local health officer shall report the contaminated property to the state department of health within one working day by:

(a) Telephone; and

(b) In writing within ten working days.

(2) The local health officer's written unfit for use report to the state department of health shall include:

(a) Description of the findings;

(b) Conclusions;

(c) Name of the property owner;

(d) Mailing and street address of the property owner;

(e) Parcel identification number and legal description of the property to including township and section;

(f) Tax account number;

(g) Date property designated unfit for use; and

(h) Clear directions for locating the property.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-550, filed 4/29/92, effective 5/30/92.]

WAC 246-205-560 Notification. (1) Within one working day after the local health officer's determination that a property is contaminated, the local health officer or the local health officer's designee shall post in a conspicuous place on the property an order prohibiting use of all or portions of the property.

(2) Within ten working days after the local health officer's determination that a property is contaminated, the local health officer shall cause to be served, either personally or by certified mail, return receipt requested, an order prohibiting use to all known:

(a) Occupants; and

(b) Persons having an interest in the property as shown upon the records of the auditor's office of the county in which the property is located.

(3) If the whereabouts of persons described under subsection (2) of this section is unknown and the same cannot be ascertained by the local health officer in the exercise of reasonable diligence, and the health officer makes an affidavit to that effect, then the serving of the order upon such persons may be made by:

(a) Personal service; or

(b) Mailing a copy of the order by certified mail, postage prepaid, return receipt requested:

(i) To each person at the address appearing on the last equalized tax assessment roll of the county where the property is located; or

(ii) At the address known to the county assessor.

(4) The local health officer shall also mail a copy of the order addressed to each person or party having a recorded right, title, estate, lien, or interest in the property.

(5) The local health officer's order shall:

(a) Describe the local health officer's intended course of action;

(b) Describe a property owner's penalties for noncompliance with this order;

(c) Prohibit a property owner's use of all or portions of the property;

(d) Describe what measures a property owner must take to have the property decontaminated; and

(e) Indicate the potential health risks involved.

(6) The local health officer shall:

(a) File a copy of the order prohibiting use of the property with the county auditor; and

(b) Provide a copy of such order to the local building permit department.

(7) The local health officer's order shall advise that:

(a) A hearing before the local health officer or local health board shall be held upon the request of a person notified of the order as required under this chapter; and

(b) The person's request for a hearing shall be made within ten days of the local health officer's serving of the order; and

(c) The hearing shall then be held within not less than twenty days or more than thirty days after the serving of the order; and

(d) In any hearing concerning whether property is fit for use, the property owner has the burden of showing that the property is decontaminated or fit for use.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-560, filed 4/29/92, effective 5/30/92.]

WAC 246-205-570 Contamination reduction. (1) An owner of contaminated property who desires to reduce the contamination shall use the services of an authorized contractor.

(2) The local health officer shall provide the property owner with a list of authorized contractors upon request.

(3) Before commencing contamination reduction, the property owner shall have a written work plan to reduce contamination of the property prepared by the contractor and approved by the local health officer. The work plan shall outline the contamination reduction and waste disposal procedures the contractor intends to use.

(4) The property owner and the contractor shall follow the state department of health contamination reduction guidelines or other more stringent procedures as deemed appropriate by the local health officer.

(5) The property owner shall be:

(a) Financially responsible for any property testing which may be required to demonstrate the presence or absence of hazardous chemicals;

(b) Financially responsible for the property's contamination reduction and disposal expenses, as well as costs incurred by the local health officer resulting from the enforcement of this chapter;

(c) Responsible for keeping records documenting contamination reduction procedures and submitting notarized copies of all records to the local health officer; and

(d) Responsible for petitioning the local health officer to review the contamination reduction records and to declare the property fit for use.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-570, filed 4/29/92, effective 5/30/92.]

WAC 246-205-580 Recording of decontamination. (1) Within ten working days of a request for review of contamination reduction records, the local health officer:

(a) Shall review the documentation to verify reduction of contamination to acceptable levels for reoccupancy as stated in state department of health guidelines or other more stringent requirements as deemed appropriate by the local health officer;

(b) May visit the property site to assess the thoroughness of the contractor's clean-up;

(c) May require the property owner to provide more extensive testing and assessment of the property site by an independent laboratory or firm qualified to perform such testing and assessment.

(2) If, after review of the information in subsection (1) of this section, the local health officer determines the property has been decontaminated, the local health officer shall within ten working days:

(a) Record a notice in the real property records of the county auditor where the property is located indicating that to the best of his or her knowledge, the basis upon which the property was originally declared unfit for use has been addressed by decontamination in accordance with board of health and department of health rules and guidelines.

(b) Send a copy of the notice to the property owner.

(c) Send a copy of the notice to the state department of health.

(d) Send a copy of the notice to the local building permit department.

[Statutory Authority: RCW 64.40.070 [64.44.070] and chapter 64.44 RCW. 92-10-027 (Order 268B), § 246-205-580, filed 4/29/92, effective 5/30/92.]

WAC 246-205-990 Fees. (1) The department shall charge fees for issuance and renewal of certificates. The department shall set the fees by rule.

(2) The fees shall cover the cost of issuing certificates, filing papers and notices, and administering this chapter. The costs shall include reproduction, travel, per diem, and administrative and legal support costs.

(3) Fees are nonrefundable and shall be in the form of check or money order made payable to the department.

(4) The department shall require payment of the following fees upon receipt of application:

(a) Twenty-eight dollars shall be assessed for each initial, renewal, or reciprocal worker certificate application.

(b) Twenty-eight dollars shall be assessed for each initial, renewal, or reciprocal supervisor certificate application.

(c) Five hundred fifty-two dollars shall be assessed for each initial, renewal, or reciprocal authorized contractor certificate application. The applicant's certificate shall expire annually on the expiration date of the contractor's license issued under the provisions of chapter 18.27 RCW.

(d) Two hundred eleven dollars shall be assessed for each initial application and fifty-one dollars shall be assessed for each renewal application for illegal drug manufacturing or storage site decontamination training course approval.

[Statutory Authority: RCW 43.70.250, 70.90.150, and 43.20B.250. 01-14-047, § 246-205-990, filed 6/29/01, effective 7/30/01. Statutory Authority: RCW 43.70.250. 00-02-016, § 246-205-990, filed 12/27/99, effective 1/27/00; 99-12-022, § 246-205-990, filed 5/24/99, effective 6/24/99. Statutory Authority: RCW 64.44.060 and chapter 64.44 RCW. 91-04-007 (Order 125SB), § 246-205-990, filed 1/24/91, effective 4/1/91.]

Oregon Law & Rules for the DECONTAMINATION of ILLEGAL DRUG MANUFACTURING SITES - ADMINISTRATIVE RULES

333-040-0010 Purpose and Scope

(1) **Purpose:** The purpose of these rules is to implement ORS 453.855-453.912 and Oregon Laws 1999, chapter 861 and provide a means whereby property found to be unfit fit for use due to chemical contamination that may result from illegal drug manufacturing can be evaluated, decontaminated and returned to use.

(2) **Scope:** These rules apply to any property as defined in ORS 453.858 and Oregon Laws 1999, chapter 861 and also includes the following: criteria used by agencies when determining property unfit for use; maintenance of listing of unfit for use properties; property owner responsibilities; assessment, decontamination, sampling and testing procedures; requirements for demolition and disposal of property contents; disclosure requirements for property sale or transfer; qualifications for decontamination and sampling personnel; licensing requirements for decontamination contractors; requirements for inspections and consultations by the Health Division; Health Division fees and reciprocity requirements; and contractor penalties.

333-040-0020 Definitions

(1) **"Agent of the Owner"** -- means a current employee of the owner of record who was in the employ of that owner at the time the property was determined to be an illegal drug manufacturing site; or is a current employee of any new owner and who was an employee of that owner at the time the property was sold or transferred to that owner prior to decontamination.

(2) **"Certificate of Fitness"** -- means a certificate issued for a particular property by the Health Division indicating that the property is fit for use.

(3) **"Contractor"** -- means a contractor licensed by the Health Division under these rules to perform assessment and decontamination activities at illegal drug manufacturing sites.

(4) **"Decontamination" and "Contamination Reduction"** -- mean reduction in levels of known contaminants to the lowest practical level, as determined by the Health Division, using currently available methods and processes.

(5) **"Division"** -- means the Health Division of the Department of Human Services.

(6) **"Full disclosure"** -- means written notice to a prospective buyer or recipient of any illegal drug manufacturing site as set forth in OAR 333-040-0100.

(7) **"Owner"** -- means:

(a) For real property, the owner of record as disclosed by the records of the recorder in the county where the property is located; or,

(b) For personal property for which a certificate of title or ownership has been issued, the person shown as owner on such certificate.

(8) **"Reasonable grounds"** -- includes, but is not limited to, the presence of chemicals, substances, apparatus and chemical residues commonly associated with an illegal drug manufacturing site.

(9) **"Unfit for Use"** -- means a determination made by an agency as listed in ORS 453.876 that a property is an illegal drug manufacturing site and may be contaminated with hazardous chemicals or substances.

(10) **"Unfit for Use listing"** -- means a listing of properties in Oregon that have been determined to be illegal drug manufacturing sites, and that have not been issued a Certificate of Fitness. The list is maintained by the Department of Consumer and Business Services-Building Codes Division, pursuant to ORS 453.879.

(11) **"Use"** -- means occupancy or entry for any reason including, but not limited to, entry for such things as cleaning, remodeling, repairs, or demolition, except as allowed in ORS 453.873, 453.876, 453.885 and Oregon Laws 1999, chapter 861.

333-040-0050 Determination of Unfitness for Use

(1) The determination that a property is unfit for use applies to any property that is known to have been

used as an illegal drug manufacturing site, or for which there are reasonable grounds to believe that the property has been used as an illegal drug manufacturing site.

(2) Any owner of a property that was an illegal drug manufacturing site prior to August 3, 1989 may obtain a Certificate of Fitness by following all the procedures and meeting all the criteria of these rules.

(3)An agency determining property unfit for use shall proceed as follows:

(a) Notify the owner or agent of the affected property by personal service or by certified mail sent within 3 working days of the determination.

Proof of such mailing shall be considered service. Proof of actual delivery is not required. Where the owner of record or the title or certificate holder is not listed in public records or cannot be reasonably notified, service of notice on the registered agent or other designated agent is sufficient;

(b) Mail a copy of the notice to the owner/agent as required in subsection (3)(a) of this rule to the Division. The Division shall notify the State Building Codes Division, the Department of Motor Vehicles, the State Marine Board and/or other affected agencies; and

(c) Post a standard warning notice provided by the Division at all entrances to the contaminated property at the time of the determination. Such notice(s) shall be displayed continuously until a Certificate of Fitness has been issued by the Division.

(4) The notice required in subsection (3)(a) of this rule shall include all of the specific information in the sample notice available from the Division, but need not be identical in form. This notice shall also include a statement that the owner may obtain a hearing by making a written request to the agency making the determination within 30 days.

333-040-0060 Unfit for Use Listing by State Department of Consumer and Business Services-Building Codes Division

(1) The Director of the State Department of Consumer and Business Services shall place the property on an official unfit for use listing after it receives a copy of a notice of determination that a property is unfit for use from the Division, or any owner of record. The State Department of Consumer and Business Services -- Building Codes Division shall update and distribute the list according to their rules.

(2)To remove a property from the unfit for use list, the owner must provide the Division written proof that:

(a) The determination that the property is unfit for use has been reversed by the agency that made the initial determination; or

(b) The determination by the agency that made the initial determination has been reversed by a court of law; or

(c) A Certificate of Fitness has been issued for the property.

333-040-0065 Procedures for Owners of Unfit for Use Properties

(1) The owner of property determined to be unfit for use shall:

(a) Prevent by reasonable means the entry, occupancy or any use whatsoever by anyone of the property in question until the property has been issued a Certificate of Fitness or until the determination that the property is unfit for use has been reversed in writing by the determining agency or by a court of law; except that qualified contractors and regulatory agencies and their authorized agents may enter such properties for purposes of evaluation, sampling, and/or decontamination; and owners or agents of the owner may enter such properties for the purposes of decontamination when approved by the Division as set forth in section (2) of this rule; and

(b) Retain a contractor to supervise the decontamination efforts, including: performing a site assessment; supervising site sampling by an independent third party as required in OAR 333-040-0130(1); submitting a work plan for Division approval; and decontaminating the property or supervising the decontamination of the property.

An owner or an agent of the owner may perform the decontamination when the requirements of this subsection and the criteria of section (2) or (3) of this rule are met.

(2) The Division may approve the performance of the decontamination work by the owner or an agent of the owner in accordance with subsection (1)(b) of this rule if all of the following criteria are met:

(a) Methamphetamine was the only drug manufactured at the site; and

(b) The method of manufacturing was the ephedrine-red phosphorus or ephedrine-sodium/lithium metal method; and

(c) The manufacturing occurred after 1994; and

(d) No visual or apparent evidence of manufacturing-related contamination, filth and debris, or biohazards are present; and

(e) No manufacturing-related fire occurred.

(3) When a contractor is proposing a demolition as a method of decontamination as set forth in section (2) of this rule, the Division may waive subsections 2(a) through 2(e) if:

(a) Methamphetamine was the only drug manufactured; and

(b) The owner or agent of the owner is prohibited from entering the structure(s) to be demolished.

(4) The Division may disallow the owner or agent of the owner from performing the decontamination work when there is evidence of removal of contents or any other form of decontamination not approved by the Division.

(5) An owner must do one of the following before unfit for use property can be used: provide evidence that the unfit for use property designation has been reversed on appeal; provide evidence that the property has been assessed as set forth in OAR 333-040-0070(1)(a), found not to be contaminated, and a Certificate of Fitness issued; or provide evidence that the property has been decontaminated and a Certificate of Fitness issued.

ORS 453.864 333-040-0070 Procedures for Assessment, Decontamination, Sampling and Testing

(1) A contractor who has been retained to assess a property shall submit all information, proposals and the **appropriate fee** to the Division on the **form supplied by the Division.**

(a) The contractor shall assess the site and characterize the extent of contamination by, but not limited to, the following:

(A) Securing any documentation available from the Division, the determining agency, other appropriate state agencies or other sources regarding the nature and extent of the illegal drug activity and evidence of such activity;

(B) Evaluating the property site to determine the nature and extent of observable damage and contamination;

(C) Providing a written site assessment with an accompanying sampling and analysis plan. The contractor shall submit the assessment and sampling plan, along with the appropriate fee listed in OAR 333-040-0180(4), to the Division for approval prior to commencement of the decontamination work;

(D) Supervising qualified, third-party sampling personnel, as set forth in OAR 333-040-0135, in the collection of site samples;

(E) **Arranging for the qualified scientific testing of air, surfaces, and articles and materials** on or taken from the site;

(F) Providing a **brief written description of the contaminated site and buildings, and a scale drawing** of the property including the location and type of all site structures; floor plans drawn to reasonable scale of all affected buildings; location of any surface waters, wells, and/or septic tanks; location of any damage, observable contamination, chemical storage, dump sites, burn piles, or drug lab operations;

(G) Supplying **photographs** of the site and the interior and exterior of any buildings, vehicles, boats or other potentially contaminated structures or areas. These photographs must show any damage, observable contamination or identified dump sites that may be present;

(H) Providing a **list of the sample locations, methods, and laboratory tests** to be performed prior to decontamination of the property, and a list of the articles and materials that may need removal from the site during the decontamination process; and

(I) Supplying the name of the company retained to collect the samples, name(s) of the analytical laboratory(ies) performing the analyses on the samples, and the name and qualifications of the sample collector.

(b) The contractor shall submit the assessment along with all tests, findings and conclusions, the name of the owner, mailing and street address, legal description of the property, clear directions for locating the property, and a completed application for a **Certificate of Fitness** along with the applicable fee to the Division if no contamination is found. If the findings are acceptable to the Division, the Division shall issue a Certificate of Fitness.

(2) If contamination is found, the contractor shall proceed as follows to decontaminate the property, or to supervise the owner or agent of the owner in the decontamination:

(a) Prepare and submit to the Division a written work plan for decontamination along with the applicable fee. The work plan, at a minimum, shall include:

(A) Complete identifying information such as street address, mailing address, owner of record, legal description, and clear directions for locating the property;

(B) A drawing of the contaminated property including floor plans of all affected buildings drawn to reasonable scale showing the location of damage and contamination, chemical storage, and the location of all sampling points used in the initial evaluation;
(C) A summary of the information obtained from the determining agency and/or other sources and a discussion of its relevance to the contamination;

(D) A summary of all tests performed, test results and a discussion of the significance of the test, along with a copy of the laboratory test results;

(E) Specific procedures for decontamination detailing any and all materials or articles to be removed, all procedures to be employed to remove contaminants, any proposed processes to cover or encapsulate contaminants, and any other proposed procedures for decontamination and disposal of contaminated materials;

(F) A complete listing of proposed post-decontamination laboratory tests of the property and the name(s) of the laboratory(ies) doing the testing;

(G) A listing of all personnel who will participate in the on-site decontamination and qualifications of each;

(H) Certification that all workers, except as set forth in OAR 333-040-0065(2), are qualified and trained under applicable OSHA rules, per 29 CFR 1910.120(e) and OAR 437-002-0100(18)(b) through (o), and will use appropriate protective clothing and equipment whenever on the property;

(I) All results of the site assessment; and

(J) Documentation that the site to be decontaminated meets the criteria established in OAR 333-040-0065(2) or (3) when proposing an owner decontamination.

(b) After securing written approval from the Division for the work plan or amended work plan, the contractor shall complete the decontamination work, or supervise the completion of the work, in accordance with the approved work plan;

(c) The contractor shall arrange for, and supervise as necessary as set forth in OAR 333-040-0130(1), all follow-up sampling as specified in the approved work plan;

(d) The contractor shall submit to the Division written and photographic documentation showing that the decontamination has been completed in accordance with the approved work plan, along with all follow-up test results required by the approved work plan, and a completed affidavit on a form supplied by the Division attesting to compliance with the approved work plan; and

(e) If in the course of decontamination, factors are discovered requiring modifications to the work plan, such modifications may be made only upon prior written approval from the Division. The contractor shall provide the Division with written confirmation that the modified work as approved was performed.

(3) The contractor shall insure that all samples collected from the site, including the taking of air, surface and bulk samples prior to and after decontamination of the property are performed by independent, qualified personnel using industry-recognized standards and protocols. The contractor shall insure that the sampling personnel utilize the Division's Drug Lab Field and Sampling Guidelines.

(a) The contractor shall insure that all laboratory tests on the samples collected from the site are performed by a laboratory following standard laboratory practices. The laboratory shall:

(A) Be currently certified or approved under appropriate state, federal, or professional programs;

(B) Use standard methods and procedures when available;

(C) Have implemented a quality assurance program, including use of quality control measures, that is acceptable to the Division; and

(D) Have a US Drug Enforcement Administration registration on file with the Division if analyzing for controlled substances.

(b) The contractor shall insure that the following components of the site sampling and laboratory testing are integrated into the work plan:

(A) The materials, equipment and techniques used, or to be used, for sampling at each location;

(B) All control samples taken, or to be taken, including the location, materials, techniques and results;

(C) The exact location within the property where each test sample was or will be collected. Samples collected after decontamination shall be collected immediately adjacent to the location initially tested, and shall be sampled by identical methods in order to accurately reflect the effectiveness of the decontamination work; and

(D) The amount of area, volume of material or air taken, or to be taken, for each test sample: air sample test results are reported in ppm; liquid and solid sample test are reported in ppm,

or in weight/weight; and surface sample test results are reported as total weight of contaminant per appropriate unit of area.

(c) All site assessment reports and test results shall be retained by the contractor for a period of not less than one calendar year from the date of certification of the site.

333-040-0080 Compliance with Regulations and Disposing of Contents of Unfit for Use Properties

A contractor must conduct any abatement activities in compliance with applicable state and federal regulations. Permits may be required for such activities. The contractor shall provide written documentation to the Division of proper disposal of all materials removed from unfit for use properties.

333-040-0090 Destruction of Unfit for Use Property

Property found to be unfit for use may be demolished all or in part in order to remove the contamination. A contractor shall comply with all state and local requirements, including any permits, for protecting health and the environment in any Division-approved demolition, and shall remove or contain all hazards resulting from the illegal drug manufacturing. A contractor shall submit a written work plan to the Division and receive written approval from the Division prior to the demolition.

Where required, permits for demolition shall also be obtained from the Building Codes Division, city or county building authority before demolition begins.

333-040-0100 Disclosure for Sale or Transfer of Illegal Drug Manufacturing Sites

(1) An owner of unfit for use property may transfer or sell the property before a Certificate of Fitness is issued if the owner provides full written disclosure to the buyer or transferee. The owner shall attach the disclosure statement to the earnest money receipt, if any, or otherwise attach the disclosure statement to the sale or transfer document for each transaction, and shall, at a minimum, include each of the following:

(a) A verbatim statement as follows: "The property in this transaction has been determined to be an illegal drug manufacturing site and cannot be rented, leased, entered or used for any reason without first being issued a Certificate of Fitness by the Oregon Health Division." The statement shall be in 10-point, bold type or equivalent;

(b) A brief description of the property including street address and legal description;

(c) A brief description of the kind and location of all drug manufacturing activities on the property if known;

(d) The name and address of the owner of record, the name and address of the buyer/recipient, and the date of the transfer;

(e) The name of the agency that determined the property was unfit for use;

(f) The address and telephone number of the agency that made the above determination; and

(g) A photocopy of the written notice of determination as issued by the determining agency listed in ORS 453.876.

(2) The owner shall provide a copy of the disclosure statement for each transaction to the Building Codes Division and the Oregon Health Division within 10 days of the closing of the sale or transfer.

333-040-0110 Qualifications, Training and Licensing of Contractors and Employees

(1) No person or entity shall advertise to undertake, or perform the work necessary to assess or decontaminate properties found to be unfit for use, without first complying with these rules and securing a license to do so pursuant to ORS 453.885(2), 453.888 and Oregon Laws 1999, chapter 861, section 3, except as set forth in section (2) of this rule or in OAR 333-040-0065(2) and (3).

(2) Before applying for a decontamination contractor license, a contractor must be registered, bonded and insured as a general contractor with the Construction Contractor's Board. Companies and persons providing only sample collection, transportation and testing services for drug laboratory decontamination contractors are not required to be licensed pursuant to these rules; however, a contractor shall supervise anyone providing sample collection as set forth in OAR 333-040-0130(1), and anyone providing sample collection services shall comply with the hazardous materials training required in section (5) of this rule and the qualification and training requirements of OAR 333-040-0135. Laboratories providing sample analysis shall comply with OAR 333-040-0070(3)(a).
(3) The contractor shall provide documentation to the Division that its supervisory personnel seeking training and certification as a drug laboratory decontamination supervisor have successfully completed at least 40 hours of hazardous materials training satisfying the requirements of OAR 437-002-0100(18) and 29 CFR 1910.120(e).

The contractor shall insure that only persons so qualifying are admitted for training, examination or on-site work as an illegal drug manufacturing site decontamination supervisor.

(4) Applicants shall demonstrate that all employees who will perform work on illegal drug manufacturing sites have completed a Division-sponsored specialized training course and have successfully passed the course examination with a score of seventy percent or greater.

(5) The contractor shall insure that its employees and agents who have on-site duties or who handle contaminated materials, chemicals or contaminated equipment, shall be trained as required by OAR 437-002-0100(18) and 29 CFR 1910.120(e) before engaging in assessment, testing or decontaminating illegal drug manufacturing sites. Refresher training as required by said rules and regulations shall be kept current.

(6) The contractor's **supervisory employees** performing on-site drug site decontamination activities shall successfully complete the initial training course required in section (4) of this rule and shall successfully complete refresher training specified by the Division every other year to renew their certification. The Division may also require more frequent training updates.

(7) The contractor's non-supervisory employees who have on-site exposure to properties found unfit for use shall receive specialized drug site decontamination training before having any on-site exposure, and must attend refresher training at least every other year to renew their certification.

The contractor shall supply the Division with documentation of such training for each employee who enters an illegal drug manufacturing site. Training referred to in sections (6) and (7) of this rule is required in addition to the training required by State and Federal OSHA regulations referred to in section (5) of this rule.

(8) All contractors and all employees of any contractor shall carry identification provided by the Division attesting to their training credentials and level of training whenever performing duties at an illegal drug manufacturing site.

333-040-0120 Contractor Listing

The Division shall maintain a complete listing of Drug Laboratory Decontamination Contractors and shall provide copies of the list as follows:

(1) To the Director of the Department of Consumer and Business Services who shall supply the list and updates to local building code enforcement agencies;

(2) To the Administrator of each county health department in the state;

(3) Upon request, to any property owner, prospective buyer, licensee or other interested person

333-040-0130 On-Site Supervision

(1) The contractor shall insure that at all times during site assessment and sampling activities on illegal drug manufacturing sites, a qualified supervisor employed by the contractor shall be on site and responsible for the activities performed. The Division may also require the presence of such a supervisor on these sites during decontamination activities.

Supervisors shall at all times while on site carry identification provided by the Division attesting to their training and credentials.

(2) An applicant for a decontamination license must demonstrate that it has one or more qualified supervisors on staff.

(3) A contractor may not perform any illegal drug manufacturing site activities unless the contractor has at least one certified supervisor.

333-040-0135 Qualifications and Training of Sampling Personnel

Persons collecting site samples shall have the following minimum qualifications:

(1) Have completed hazardous materials training, as set forth in OAR 333-040-0110(5); and

(2) Be a Certified Industrial Hygienist (CIH); or

(3) Have a Bachelor of Science Degree in Health and Safety, Industrial Hygiene, or Environmental and/or Basic Sciences, and six months experience working with or for a professional environmental or industrial hygiene firm, OSHA, Environmental Protection Agency (EPA), Department of Environmental Quality (DEQ), or for an environmental laboratory certified under a state, federal, or professional program; or

(4) Have an Associate Degree in Hazardous Materials Management or Environmental Evaluations/Chemistry, and one year experience working under the direct supervision of personnel identified in section (2) or (3) of this rule.

333-040-0140 Entry and Inspection

Properties determined to be unfit for use may be entered and inspected as set forth in ORS 453.873 and Oregon Laws 1999, chapter 861.

Law enforcement officials may accompany such entries for safety or security purposes. The owner, manager, tenant, or occupant of such property shall allow access to all parts of such property for these purposes and for quality control evaluations pursuant to OAR 333-040-0150 from the date of the finding that the property is unfit for use and up to six months after a Certificate of Fitness has been issued.

333-040-0150 Quality Control Checks

(1) The Division or designated agents may inspect, evaluate and perform tests upon any property for which a Certificate of Fitness has been requested or issued. The inspection, evaluation and tests shall determine whether the approved work plan was followed, whether post-cleaning tests submitted meet the requirements of OAR 333-040-0070(3), and whether the property has been decontaminated adequately. The contractor shall be subject to license revocation, suspension, civil penalties or other penalties as set forth in ORS 453.990 if inadequate decontamination is found.

(2) The Division may monitor the work of any contractor at any illegal drug manufacturing site.

333-040-0170 Advice and Consultation

Between the dates of scheduled training for contractors as set forth in ORS 453.888, the Division shall be available to consult with contractors, as well as those planning to become contractors, on information pertinent to illegal drug manufacturing sites, including but not limited to chemicals found at such sites and their toxicity, new or revised decontamination procedures, personal protective equipment and applicable federal regulations and state rules.

333-040-0180 Licenses and Fees

(1) For applicants applying for an initial license, the following fees are payable to the Division:

(a) Drug Site Decontamination Contractors initial training course:

(A) Course Registration and Processing fee: $150.00;

(B) Initial Examination fee (each time taken): $100.00;

(C) Refresher Course fee: $100.00.

(b) Initial License Application fee: $1,000.00 (if made on or before July 1, of even-numbered calendar years). If initial application is made before July 1, of any odd-numbered year: $500.00.

(2) Renewal of License:

(a) Renewal fee (must be made on or before July 1 of even-numbered years): $1,000.00; licenses expire on June 30 of each even-numbered year and must be renewed on or before July 1 of each even-numbered year.

(b) Penalty for late renewal (if made after July 15): $100.00.

(3) Reciprocity fees:
(a) License Application fee: $1,000.00 (if made on or before July 1 of even-numbered calendar years). If application is made before July 1 of any odd-numbered year: $500.00;

(b) Contractor License Review fee: $200.00;

(c) Worker or Supervisor Certification Review fee: $100.00;

(4) Decontamination fees:

(a) Site Assessment Review fee: $300.00;

(b) Work Plan Review fee -- for each property: $900.00;

(c) Project Completion Review and Certificate of Fitness fee) (for each property: $200.00;

(d) Issuance of additional copies of Certificate of Fitness: $5.00.

(5) No portion of any of the above fees is refundable unless the fee was submitted in error and the application is withdrawn by written request of the applicant within 10 working days of submission.

333-040-0190 Reciprocity

(1) The Division may provide reciprocal licensure for contractors licensed in another state, and reciprocal certification for supervisors and workers trained and certified in another state if standards and training are substantially equivalent to these rules. Applications for a decontamination contractor license or worker/supervisor certification are subject to review and approval by the Division. Applicants for reciprocity shall submit to the Division:

(a) A completed application on a form provided by the Division;

(b) Documentation of specialized training for drug manufacturing site decontamination;

(c) Evidence of successful completion of training as set forth in OAR 437-002-0100(18) and 29 CFR 1910.120(e);

(d) Evidence of registration, bonding, and insurance with the Oregon Construction Contractor's Board; and

(e) A fee as set forth in OAR 333-040-0180.

(2) After reviewing the application, the Division may issue the applicant a certificate/license or require:

(a) Additional information;

(b) A refresher course; or

(c) A Division-administered examination.

333-040-0230 Denial, Suspension, Revocation of License and Civil Penalties

(1) An applicant for an initial license as a Drug Laboratory Decontamination Contractor will be denied if the applicant fails to meet any of the qualifications or requirements of these rules.

(2) The Division may deny, suspend or revoke the license of any contractor pursuant to ORS 453.888, ORS 183.310 to 183.550 and Oregon Laws 1999, chapter 849.

(3) Denials, suspensions and revocations of licenses are contested cases subject to ORS 183 and Oregon Laws 1999, chapter 849 and the model procedural rules of the Attorney General.

OREGON REVISED STATUTES
CLEANUP OF TOXIC CONTAMINATION FROM
ILLEGAL DRUG MANUFACTURING

453.855 Purpose. It is the purpose of ORS 105.555, 431.175 and 453.855 to 453.912 to provide a just, equitable and practicable method, to be cumulative with and in addition to any other remedy provided by law, whereby property which endangers the life, safety or welfare of the general public or occupants of property because of toxic chemical contamination that may result from illegal drug manufacturing may be required to be decontaminated, vacated and secured against use, or demolished. [1989 c.915 s.1]

453.858 Definitions for ORS 453.855 to 453.912. As used in ORS 453.855 to 453.912:
(1) "Controlled substance" does not include marijuana.

(2) **"Illegal drug manufacturing site"** means any property on which there is a reasonably clear possibility of contamination with chemicals associated with the manufacturing of controlled substances and:

(a) Where activity involving the unauthorized manufacture of a controlled substance listed on Schedules I and II or any precursor chemical for such substances occurs; or

(b) Wherein are kept, stored or located any of the devices, equipment, things or substances used for the unauthorized manufacture of a controlled substance listed on Schedules I and II.

(3) "Property" means any:

(a) Real property, improvements on real property or portions of the improvements;

(b) Boat, trailer, motor vehicle or manufactured dwelling; or

(c) Contents of the items listed in paragraph (a) or (b) of this subsection. [1989 c.915 s.2; 1999 c.861 s.1]

453.861 Applicability. The provisions of ORS 105.555, 431.175 and 453.855 to 453.912 apply to any property that is known to have been used as an illegal drug manufacturing site or for which there are reasonable grounds to believe that the property has been used as an illegal drug manufacturing site. Nothing in ORS 105.555, 431.175 and 453.855 to 453.912 applies to property to the extent that the devices, equipment, things or substances that are used for delivery,

manufacture or possession of a controlled substance are kept, stored or located in or on the property for the purpose of lawful sale or use of these items.

453.864 Rules. The Assistant Director for Health shall adopt rules to carry out ORS 105.555, 431.175 and 453.855 to 453.912. The rules shall be developed in consultation with:

(1) The State Fire Marshal or designee;

(2) The director of the Poison Control and Drug Information Program of the Oregon Health Sciences University, or a designee thereof;

(3) The Director of the Department of Environmental Quality, or a designee thereof;

(4) The Director of the Department of Consumer and Business Services, or a designee thereof;

(5) The Director of Transportation, or a designee thereof; and

(6) Any other governmental agency determined appropriate by the Health Division whose advice and information is necessary for the formulation of the rules authorized by this section. [1989 c.915 s.6]

453.867 Restriction on transfer of property used as illegal drug manufacturing site; contracts voidable. (1) Unless determined fit for use, pursuant to ORS 105.555, 431.175 and 453.855 to 453.912 and rules of the Health Division, or as authorized by ORS 453.870, no person shall transfer, sell, use or rent any property knowing or having reasonable grounds to believe it was used as an illegal drug manufacturing site.

(2) All contracts, oral or written, for the transfer, sale, use or rent of property in violation of subsection (1) of this section are voidable between the parties, at the instance of the purchaser, transferee, user or renter. This subsection shall not make voidable any promissory note or other evidence of indebtedness or any mortgage, trust deed or other security interest securing such a promissory note or evidence of indebtedness, where such note or evidence and any such mortgage, trust deed or other security interest were given to a person other than the person transferring, selling, using or renting the property to induce such person to finance the transfer, sale, use or rental of the property.

This section shall not impair obligations or duties required to be performed upon termination of a contract, as required by the provisions of the contract, including but not limited to payment of damages or return of refundable deposits. [1989 c.915 s.4]

453.870 Transfer allowed after full disclosure. (1) Any property that is not fit for use as determined under ORS 453.876 may be transferred or sold if full, written disclosure, as required by rules of the Health Division, is made to the prospective purchaser, attached to the earnest money receipt, if any, and shall accompany but not be a part of the sale document nor be recorded.

However, such property shall continue to be subject to the provisions of ORS 453.876, regardless of transfer or sale under this section.

(2) Any transferee or purchaser who does not receive the notice described in subsection (1) of this section may set aside the transfer or sale as voidable and bring suit to recover damages for any losses incurred because of the failure to give such notice.

(3) The transferor or seller of any property described in subsection (1) of this section shall notify the Health Division of the transfer or sale as required by rule of the division. [1989 c.915 s.5]

453.873 Entry onto property; purposes; inspection. For the purposes of enforcement of ORS 105.555, 431.175 and 453.855 to 453.912, the Assistant Director for Health or a designee thereof or the State Fire Marshal or a designee thereof, upon presenting appropriate credentials and a warrant, if necessary, issued under ORS 431.175 to the owner or agent of the owner, may:

(1) Enter, at reasonable times, any property that is known to have been used as an illegal drug manufacturing site or for which there are reasonable grounds to believe that the property has been used as an illegal drug manufacturing site.

(2) Inspect, at reasonable times, within reasonable limits and in a reasonable manner, property known to have been used as an illegal drug manufacturing site or for which there are reasonable grounds to believe the property has been used as an illegal drug manufacturing site. [1989 c.915 s.7; 1999 c.861 s.5]

453.876 Determination that property is not fit for use; appeal. (1) The Assistant Director for Health or a designee thereof, the State Fire Marshal or a designee thereof or any law enforcement agency may determine that property is not fit for use pursuant to ORS 105.555, 431.175 and 453.855 to 453.912 and applicable rules adopted by the Health Division and may make that determination on site. The determination is effective immediately and renders the property not fit for use.

(2) The owner may appeal the determination, to the agency that made the determination, within 30 working days after the determination, pursuant to rules of the agency, or to circuit court.

(3) The appeal to the agency is not a contested case under ORS 183.310 to 183.550. The question on appeal is limited to whether the site is an illegal drug manufacturing site. [1989 c.915 s.9; 1999 c.861 s.2]

453.879 Director of the Department of Consumer and Business Services to be notified of determination. When the Assistant Director for Health or a designee thereof, the State Fire Marshal or designee thereof or any law enforcement agency makes a determination that property subject to ORS 105.555, 431.175 and 453.855 to 453.912 is not fit for use, the assistant director or designee thereof shall notify the Director of the Department of Consumer and Business Services of the determination. The director shall list the property as not fit for use until the director is notified that the property has been certified by the Health Division pursuant to ORS 453.885, or the initial determination is reversed on appeal, or the property is destroyed. Upon receipt of the certificate, the director shall cause the property to be removed from the list described in this section. [1989 c.915 s.10]

453.882 Use of contaminated property constitutes public nuisance. The owner of property that has been determined to be not fit for use pursuant to ORS 453.855 to 453.912 who allows such property to be used as if it were fit for use shall be considered to be maintaining a public nuisance subject to being enjoined or abated under ORS 105.550 to 105.600. [1989 c.915 s.12; 1999 c.168 s.10]

453.885 Decontamination of property; certification process. (1) The owner of property determined to be not fit for use under ORS 105.555, 431.175 and 453.855 to 453.912 who desires to have the property certified as fit for use may use the services of a contractor licensed by the Health Division to decontaminate the property or, upon approval by the division, the owner, or an agent of the owner, may perform the decontamination work. The contractor, in coordination with the owner or agent of the owner, shall prepare and submit a written work plan for decontamination to the Health Division.

If the work plan is approved and the decontamination work is completed according to the plan and is properly documented, the division shall certify the property as having been decontaminated in compliance with rules of the Health Division. Upon the completion of the work plan, the division shall require the licensed contractor's affidavit of compliance with the approved work plan.

(2) The property owner shall notify the Director of the Department of Consumer and Business Services of the certification. No person who is not licensed by the Health Division under ORS 105.555, 431.175 and 453.855 to 453.912 shall advertise to undertake or perform the work necessary to decontaminate property determined to be not fit for use under ORS 105.555, 431.175 and 453.855 to 453.912.

(3) Upon receipt of the certificate and a request by the property owner to remove the property from the list, the Director of the Department of Consumer and Business Services shall cause the property to be removed from the list. [1989 c.915 s.11; 1999 c.861 s.3]

453.888 License required to perform decontamination; procedure; grounds for denial, revocation or suspension of license; civil penalty. (1) The Health Division by rule shall establish performance standards for contractors under ORS 105.555, 431.175 and 453.855 to 453.912.

(2) The division shall train and test, or may approve courses to train and test, contractors' personnel on the essential elements in assessing premises used as an illegal drug manufacturing site to determine hazard reduction measures needed, techniques for adequately reducing contaminants, use of personal protective equipment and relevant federal regulations and state rules.

(3) Upon the contractor's supervisory personnel's successful completion of the training and testing and the contractor having complied with the rules of the division and having paid the required fee, the contractor shall be licensed. Licenses are renewable biennially, as determined by rule of the division, upon supervisory personnel's successful completion of any required refresher course.

(4) The division may deny, suspend or revoke the license of any contractor pursuant to ORS 183.310 to 183.550 for:

(a) Failing to:

(A) Perform decontamination work under the supervision of trained personnel;

(B) File a work plan;

(C) Perform work pursuant to the plan;

(D) Pay a civil penalty imposed under ORS 105.555, 431.175 and 453.855 to 453.912; or

(E) Perform work that meets the requirements of ORS 453.903.

(b) Committing fraud or misrepresentation in:

(A) Applying for a license;

(B) Seeking approval of a work plan; or

(C) Documenting completion of the work to the division.

(5) The division may impose a civil penalty not to exceed $500, in addition to or in lieu of license denial, suspension or revocation, pursuant to ORS 183.310 to 183.550. [1989 c.915 s.13; 1991 c.67 s.126]

453.891 Health Division to provide information to licensed contractors and those planning to become licensed. Between the dates of scheduled training for contractors under ORS 453.888, the Health Division shall be available to consult with licensed contractors, as well as those planning to become licensed, on information pertinent to illegal drug manufacturing sites, including but not limited to chemicals found at such sites and their toxicity, new or revised decontamination procedures, personal protective equipment and applicable federal regulations and state rules. [1989 c.915 s.19]

453.894 Licensing fees. (1) The Health Division shall establish by rule a schedule of fees for at least the following:

(a) Initial licenses and renewal under ORS 105.555, 431.175 and 453.855 to 453.912.

(b) Training courses and examinations conducted by or on behalf of the division.

(c) Reexaminations for failing the initial examinations.

(d) Review of work plans.

(2) The fees established under subsection (1) of this section shall be based upon the costs of the division in carrying out the provisions of ORS 105.555, 431.175 and 453.855 to 453.912.

(3) If a license renewal application and fee is not received by the division within 15 days after the expiration of the license, a penalty of $100 shall be added and collected.

(4) The fees collected under this section shall be paid into the State Treasury and deposited in the General Fund to the credit of the Health Division Account. Such moneys are continuously appropriated to the Health Division to pay the division's expenses in administering the provisions of ORS 105.555, 431.175 and 453.855 to 453.912.

(5) Subject to prior approval by the Oregon Department of Administrative Services and a report to the Emergency Board prior to adopting the fee, any fee or change shall be within the budget authorized by the Legislative Assembly as that budget may be modified by the Emergency Board. [1989 c.915 s.14; 1991 c.703 s.12; 1999 c.861 s.8]

453.897 Lists of licensed contractors to be made available. The Health Division shall provide lists of the names of contractors licensed under ORS 105.555, 431.175 and 453.855 to 453.912 to the Director of the Department of Consumer and Business Services who shall distribute the lists to local building code enforcement agencies. The local agencies shall make the list available on request and shall supply a copy to any property owner whose property is determined to be not fit for use under ORS 105.555, 431.175 and 453.855 to 453.912. [1989 c.915 s.15]

453.900 Inspection of decontamination work; contracts to perform. The Health Division may contract with state or local agencies or private persons to perform any inspection or to obtain any samples relative to determining the adequacy of decontamination work. [1989 c.915 s.16]

453.903 Evaluation of decontamination projects; civil penalty. The Health Division shall evaluate annually a number of the property decontamination projects performed by licensed contractors to determine the adequacy of the decontamination work, using the services of an independent environmental contractor or state or local agency. If a project fails the evaluation and inspection, the contractor is subject to a civil penalty and license suspension that prohibits the contractor from performing additional work until deficiencies have been corrected on the project. Civil

penalties under this section shall be imposed as provided in ORS 183.090.

453.906 Condemnation or demolition of property; standards; rules. The Director of the Department of Consumer and Business Services shall adopt rules fixing uniform standards whereby local building code enforcement agencies may require that property determined under ORS 105.555, 431.175 and 453.855 to 453.912 to be not fit for use may be subject to action to condemn or demolish the property or to require the property be vacated or contents be removed from the property. [1989 c.915 s.17]

453.909 Authority of counties and cities. Counties and cities by ordinance may prohibit use or occupancy of or provide for regulation of any property so long as such prohibition or regulation is consistent with ORS 105.555, 431.175 and 453.855 to 453.912 and rules of the Health Division. [1989 c.915 s.20; 1999 c.861 s.6]

453.912 Governmental immunity from liability. The state and any local government, their officers, agents and employees shall not be liable for loss or injury resulting from the presence of any chemical or controlled substance at a site used to manufacture illegal drugs or from actions taken to carry out the provisions of ORS 105.555, 431.175 and 453.855 to 453.912 except for liability for damages resulting from gross negligence or intentional misconduct by the state or local government.

PENALTIES

453.990 Criminal penalties. (1) Any violation of ORS 453.175 or 453.185 or any rules of the State Board of Pharmacy thereunder is a Class C misdemeanor.

(2) Violation of any of the provisions of ORS 453.005 to 453.135 is a Class B misdemeanor. A second and subsequent violation of any of the provisions of ORS 453.005 to 453.135 is a Class A misdemeanor.

(3) Violation of any provision of ORS 453.605 to 453.800 is a Class A misdemeanor.

7. **A. Cost of Licenses**

Washington	$ 28.00 for Worker (2 yrs) $ 28.00 for Supervisor (2 yrs) $ 552.00 for Contractor firms (2 yrs)
Oregon	$ 1,000.00 for Worker (2 yrs) $ 1,000.00 for Supervisor (2 yrs) $ 1,000.00 for Contractor firms (2 yrs)

B. Cost of Training

OSHA Hazwoper (40hrs)	$ 575.00
Washington 2 day course for Worker	$ 375.00
Additional day for Supervisor	$ 225.00
Oregon 2 day course for Worker	$ 375.00

8. Washington and Oregon Training Course Outline

A. Length of Training Course

Washington	2 days for Worker 1 additional day for Supervisor
Oregon	2 days for Worker No additional training for Supervisor

B. Course Outline for Worker

Section 1	Introduction and Background
Section 2	Drug Types
Section 3	Toxicology
Section 4	Flammable and Combustible Materials
Section 5	Corrosives: Acids and Bases
Section 6	Reactives
Section 7	Material Safety Data Sheet and Chemical Reference Exercise
Section 8	Bloodborne Pathogens
Section 9	Manufacturing Methods and Equipment
Section 10	Personal Protective Equipment (PPE)
Section 11	Heat Induced Illness
Section 12	Personal Decontamination and Personal Hygiene
Section 13	Site Characterization
Section 14	Handling Contaminated Debris and Waste Disposal Plans
Section 15	Property Cleaning Methods
Section 16	Oregon and Washington Statutes and Rules
Section 17	Glossary and Bibliography
Section 18	Decontamination of Illegal Drug Manufacturing Sites Homework – Review Problems
Section 19	Group Exercises and Clean-up Scenarios

C. Course Outline for Supervisor (Washington)

Section 1 Introduction
Pre-Test
Review of Contaminant Levels
Site Assessments
Exercise

Section 2 WA Guidelines For Contamination Reduction and Sampling at Illegal Drug Manufacturing Sites

Section 3 Drug Lab Waste Disposal

Section 4 Washington Drug Lab Laws

Section 5 Work Plan Template
Site Assessment
Pre-Cleanup Sampling Plan
Cleanup procedures
Post-Cleanup Sampling Plan
Final Report
Statement of Compliance
Supervisor Test

9. Current BTR Thoughts on Training

Minimum requirements for training of drug lab remediation personnel

A. All onsite workers

1. 40 hour Hazwoper course with required refresher courses
2. Arizona statute, rules and practice course with required refresher Courses

Arizona statute, rules, and practice course outline

1. Drug Types
2. Toxicology of drug lab chemicals
3. Bloodborne Pathogens
4. Manufacturing Methods, equipment and hazards
5. Handling contaminated drug lab debris and waste disposal
6. Property cleaning methods
7. Arizona State Statutes
8. BTR Rules

B. All onsite supervisors

1. 40 hour Hazwoper course with required refresher courses
2. Arizona statute, rules and practice course with required refresher courses
3. Documentation from employer of 40 or more hours of on-site experience in hazardous material decontamination projects

Arizona supervisors course outline

1. Supervisor Roles and Responsibilities
2. Development of Cleanup Plans and procedures
3. Site Safety
4. Specific OSHA regulations