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Clandestine Drug Laboratories:

Confronting a Growing National Crisis

CLANDESTINE DRUG LABORATORIES

Confronting a Growing National Crisis

Volume II

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RESOURCE NOTES

*REFERENCE NOTES FOR MODULE I LESSON 1

CLANDESTINE LABORATORY ENFORCEMENT/SEMINAR/

TRAINING AND TECHNICAL ASSISTANCE

PART I:

BACK-GROUND:

Drug abuse is the number one social problem in the United States.

(A) Rank among the top cause of death for young Americans.
(B) Estimated cost of drug abuse in the United States is 1.5 billion dollars.
(C) Cost to industry $47 to $49 billion dollars, from loss of efficiency and productivity, accidents, absenteeism, thievery and medical compensation.

II. PROBLEM:

We face a growing number of Clandestine Laboratories operating in the United States.

SEIZURE MADE DURING 1987 BY (DEA).

(A) 1987 - Six-hundred and eighty two (682) laboratories were seized in the United States and thirty-four percent (34%) over 1986.
(B) Approximately twelve-hundred (1,200) laboratories were seized by law enforcement agencies, federal, state and local police.

"DRUG ABUSE" - It has been stated that approximately twenty percent (20%) of all drugs abused in the United States are produced in the United States.

FOREIGN AND DOMESTIC EFFECT.

The more pressure put on sources, the more we can anticipate increased Clandestine Laboratory activity in the United States.

HOSPITAL EMERGENCIES:

Methamphetamine abuse continued to increase during 1987.

A number of Methamphetamine related hospital emergencies increased thirty percent (30%) from 1986 to 1987 and is at its highest level since 1980.

CLANDESTINE LABORATORIES REMAIN THE PRINCIPAL SOURCE FOR METHAMPHETAMINE:

States where most Clandestine Laboratories appear to be operating are:

1. Southern and Northern California.
2. Eastern Texas.
3. Oregon and Washington.
4. New Mexico.
5. Florida.
6. Pennsylvania.
7. New Jersey

Clandestine Laboratories were also seized in other states, but many have not been included in these statistics.

COORDINATION WITH DEA/BJA/NSA.

We intend to develop and implement an extensive awareness program with:

A. Participants' handbooks.
B. Oriented monographs.

NSA/BJA PROPOSES TO HAVE FIFTEEN (15) SEMINARS.

PART III.

PURPOSE:

TO INCREASE AWARENESS:

A. Dangers of Clandestine Laboratory to the community as well as Police Officers.
B. Drug abuse impact in the community.
C. Need for safety training and equipment.
D. Coordination between enforcement, chemists and prosecutors.
E. Dangers in handling of hazardous materials found in a Clandestine Laboratory.
F. Agency responsibility as it relates to health and safety, not only to police officers, but to communities under the EPA laws, OSHA laws and Transportation laws, which regulate the handling transportation and disposal of hazardous materials.
G. Responsibility and cost for disposal of hazardous materials upon seizure of Clandestine Laboratory agencies becomes "generator", and is responsible for safe disposal of all hazardous materials found in the laboratory.

VI. ELECTED OFFICIALS:

(A) Show the need for Resources.

(1) Equipment and Training.

PROSECUTORS:

(A) The need for close cooperation with law enforcement at an early stage in Clandestine Laboratory Ivestigations.

CHEMISTS:

(A) To advise law enforcement as to type and capacity of laboratory. Help make decisions as to when and how laboratory should be secured.

EMERGENCY TEAMS:

Should be on standby in case of accident, explosion or fire. Clandestine Laboratory may be operating next door. They have been found in rural areas, residential neighborhoods, farms, mountain cabins, house trailers and recreational vehicles. These are time bombs waiting to explode.

X. GOAL/OBJECTIVE:

To provide law enforcement officials, prosecutors, state and local government elected officials, chemists and government regulatory agency personnel with the necessary information and the opportunity to learn the protocols and methodologies necessary to safely investigate seize and dismantle a Clandestine Laboratory.

*REFERENCE NOTES FOR MODULE I LESSON NO.1

"OVERVIEW OF NARCOTICS SEMINAR"

June 20, 1988 - Louisville, Kentucky

Presentation: NSA/BJA Cooperative Agreement

Situation:

- Laboratories being seized @ projected rate of eight-hundred (800) per year.
- Danger:
  - o Twenty (20%) discovered by fire or explosion.
  - o Ten (10%) of all investigations on the West Coast encountered:
- Auto and silenced weapons.
- Booby traps or explosive devices.
- Thirty (30%) used counter measures (electronic) scanners and video monitors and sound sensor.
- Injuries:
  - * Thirteen (13) Firemen - Four (4) Police Medical Treatment.
  - * Others: Burns, rashes, nausea, headaches.
  - * Long Term effects unknown.
  - * Inhaled or absorbed by skin.

Response: BJA/NSA cooperative Agreement.

- o Fifteen (15) - Regional Seminars covering:
  - Investigations.
  - Legal.....Seizure/Prosecution.
  - Safety.
  - Disposal to storage and dump sites.

Assistance by: State/Local/Federal/Other Grantees.

- Regional Sites - Locate and obtain.
- Identify and list specialty resources.
  - -- Haz/mat-Legal Act -

NSA: - Develop curriculum, lesson plans, handbook and other material.
Who: Legal/Investigative/Regulatory?

*REFERENCE NOTES FOR MODULE II LESSON NO. 1

A. The information provided in this segment is to introduce the general enforcement techniues employed by the Drug Enforcement units in initiating and developing a drug investigation with special emphasis on Clandestine Laboratories.

B. MATERIAL COVERED: (VuGraph 2-1)

(1) The basic purposes for making cases.
(2) The primary steps in developing a case.
(3) The basic sources from which to seek information on which to initiate investigations.
(4) The sources and techniques which may be utilized to verify and corroborate information obtained.
(5) Planning for the action phase of an investigation.
(6) The general types of cases made by most narcotic investigative units.

C. PURPOSE:

The following is provided to help to initiate and develop cases in such a manner as to preclude errors which would allow drug traffickers to escape prosecution or conviction because the investigator did not understand that the techniques used to make a case against the trafficker were unacceptable to the judicial system.

II. DEVELOPMENT

A. FOUR BASIC PURPOSES FOR MAKING CASES. (VuGraph 2-3)

(1) Immobilize Individual Traffickers -
(2) Develop Intelligence Relative To Other Drug Or Non-Drug Cases -
(3) Control, Minimize Or Eliminate The Traffic In A Specific Threatened Community -
(4) Eliminate The Total Traffic -

B. GENERAL STEPS IN CASE DEVELOPMENT.

(1) Receipt of Information - Initiation of a case begins when the officer receives information which is then analyzed with a view toward determining what course of action should be taken relative to that information. There are many sources of information, some of which are as follows:

a. Cooperating Individuals -
b. Other Officers -
c. Other Enforcement Agencies -
d. Good Citizens -
e. Chemical Supply Houses -
f. Hospital Emergency Room -
g. Intelligence Units -

(2) Verification/Corroboration - Once information is received, the officer must make independent efforts to prove the validity of that intelligence. Some of the techniques which may be used to verify or corroborate information are:

a. Office Files -
b. Other Officers of Your Agency -
c. Other Law Enforcement Agencies -

d. Other Cooperating Individuals -
e. Surveillance -
f. Government Agencies -
g. Private Businesses -
h. Institutions -

(3) Planning - Prior to acting on information received and verified, we must review and analyze that information in light of our own prior knowledge, experience, and resources in order to choose the proper investigative techniques and course of action.

Some of the factors to be considered in planning an investigation are as follows:

a. Why are you making the case?
b. Do you have sufficient manpower?
c. Money.
d. Time.
e. Equipment.
f. The type of drug/lab involved.
g. Surveillance problems.
h. The motivation of the informant.
i. Analysis of the motivation and violent nature of the violator.
j. Rapport with the prosecutor's office.

4. Action Phase - The basic types of cases made in drug investigation are possession cases, buy cases, manufacturing cases and conspiracy cases. A single investigation often will incorporate all four types of cases being made on the violators. The following material relates to the initiation and seizure of a Clandestine Laboratory.

A. Initiation of a Clandestine Lab Investigation.

The initiation and successful seizure of a Clandestine Laboratory is based upon recognizing certain factors that are unique to a lab operation.

1. Indicators.

   a) Availability and price.

   b) Cooperating individuals.

   c) Suspicious activity.

   d) Information received.

   e) Fire and/or explosion.

   f) Reports of emergency.

2. Location:

   Operational Clandestine Laboratories may be either stationary or mobile, rural or urban.

   N.B. Clandestine labs may be boxed and stored or moved from site to site.

3. Requirements for a Clandestine Laboratory:

a) Privacy.

b) Utilities.

c) Knowledge.

d) Chemicals and Equipment.

4. Precursor Chemical and Laboratory Equipment Control Program.

a) Establish the capability to monitor the movement of essential chemicals and laboratory equipment when the transaction is suspect.

5. Development of a Clandestine Laboratory Investigation.

1. Surveillance: A vital investigative tool which helps to develop the following.

a) Identifies individuals.
b) Identifies locations:
c) Identifies type of lab:

2. Controlled Delivery:

a) Your unit delivers the precursors.

3. Prosecutor Involvement:

a) Warrants may be needed immediately.
b) Keep prosecutor abreast of the investigation.

4. Chemist's involvement:

a) He can be very helpful and involved in the investigation from the beginning.

5. The investigation must reveal.

a) The exact location of the laboratory.
b) All persons involved.

6. Probable Cause.

a) List the chemicals that are known to have been received.
b) Include supporting background material.

* Information received from a tested reliable source.

7. Timing.

a) If a warrant is issued the investigator is in control.

8. The Seizure of a Clandestine Laboratory. (Major elements).

1. Determine.

a) The length of time the chemist, equipment and chemicals are located together in one location.
b) The length of time activity appears to be going on.
c) Detect odors, being careful of the curtilage.
d) Obtain EPA I.D. Number.
e) Alert the Clandestine Lab Response Team.
f) Determine the type of lab.
g) Identify the violators.

2) Raid.

a) Follow the raid procedures for a Clandestine Laboratory utilizing the lab response team. (Raids are discussed in more detail in another subject

heading).

3) Seizure. (Some common items).

a) All final products; including residue.
b) Primary and secondary precursors.
c) Raw materials and essential chemicals.
d) Glassware, equipment.

4) Special Handling - Normal evidence procedures usually cannot be used.

- The chemist will determine what procedures are safe. Recommended procedures must also meet legal requirements.

N.B. Use a designated qualified contractor for clean up.

*REFERENCE NOTES FOR MODULE II LESSON NO. 2

CLANDESTINE LABORATORY

RAID PLANNING AND EXECUTION

I. DEVELOPMENT

A. Introduction: Conducting a raid on a Clandestine Laboratory is one of the more dangerous aspects of law enforcement work. Consequently, much emphasis should be placed in this area with respect to training and planning. In conducting a raid, we have a police situation in which we are knowingly entering into a situation which may well result in casualties.

A properly planned and executed raid will produce optimum results, whereas improper planning and failure to recognize and appreciate the many factors involved in raid planning has resulted in the untimely deaths and injuries of enforcement personnel. Public confidence is the cornerstone of effective law enforcement.

B. Raid Defined: The word "RAID" conjures up many different scenarios in enforcement work, but for the purposes here, a raid is defined as follows:

> "A raid is the lawful sudden attack or invasion of a building or locality to apprehend a suspect, seize a Clandestine Laboratory, seize narcotic evidence, or recover stolen property".

C. Legal Authority and Guidelines: Law enforcement officers must of course function within the framework of the laws of the individual states and cities, as well as the over-all Federal framework.

Volumes have been written relating to the pros and cons of the legalities involved in the area of search and seizure. It isn't within the scope of this section to attempt to discuss these legalities. It is however, necessary to be aware that there are legal guidelines which must be followed and legal implications which must be considered with regard to raid operations.

In this section covering raids, we are to assume that all of the legal requirements have been met and there is a legal basis for conducting the raid. However, it is most important to be aware of the legal guidelines which must be followed or any evidence uncovered in the course of the search may be declared inadmissable, in that the search may be deemed to be unconstitutional.

RAID OBJECTIVES:

The following are some of the more common reasons for conducting a raid.

A.) To Apprehend a Suspect - When a raid is conducted to accomplish this objective, narcotics enforcement officers are usually concerned with fugitives and conspiracy suspects.

In this instance, an estimation of the amount of resistance likely to be encountered is of prime importance. As much information as possible must be gathered concerning the nature of the suspects themselves. A review of the case files, police records and M.O., will give you an insight as to the character of the suspects. If the suspect has a record of assaults with weapons, or is an escaped convict, you can expect the worst. In short..."Know Your Suspect".

B.) Seizure of Clandestine Laboratories and/or Evidence - Obviously narcotic evidence can be readily destroyed, disposed of and concealed. In fact, a common technique of a narcotic violator is to store his stash of narcotics near a toilet or drain. At the first sign of trouble the evidence can be washed away.

Know exactly what type of evidence you are seeking and be sure that all members of the raid team are aware of the nature of the evidence being sought. This information must be known in order to get a warrant issued in the first place.

Knowledge of the nature of the evidence is also for the protection of the raid team. Team members will be extremely careful in the handling of powders and chemicals at the scene of a Clandestine Laboratory as opposed to a raid on a marijuana stash.

C.) Recovering Stolen Property - The third objective of conducting a raid is not a direct function to those in narcotics enforcement. But it very often becomes a by-product of a narcotics raid. Often times the raided location will be loaded with stolen goods that have been exchanged for narcotics, or the suspects themselves might also be operating a fencing/burglary ring as well as dealing in narcotics.

PROCEDURES FOR SECURING A WARRANT:

Every agency should have a standard operating procedure for applying for and securing a warrant (search/arrest) with a minimum of delay. At times speed is of the utmost importance not only in order to seize narcotic evidence, but in the case of

undercover operations to insure the safety of the undercover agent.

Raid Essentials:

Raids are normally conducted after a careful investigation and it's been determined that other methods of accomplishing our intended goals are not suited to the situation at hand. For example: A Clandestine Laboratory.

As in a military operation, the undertaking of a raid operation requires:

1 - Knowledge of the mission.
2. - Reconnaissance.
3 - Planning.
4 - Preparation.
5 - Instructions.
6 - Orders.
7 - Execution.

However, in civil enforcement we must deal with several over-all considerations:

1 - Is the raid necessary?
2 - Determine all aspects of the target-who, what, where, why, when, and how?
3 - Be certain that all members of the raid team are aware of all the details concerning the raid operation.

The three essentials of a well planned and executed raid are.

A - SURPRISE
B - SPEED
C - SIMPLICITY

In looking at each of these elements, be aware that there are trade offs depending on the situation. An example would be when toxic chemicals in a Clandestine Laboratory are a major factor and threat to the raid party personnel.

A. SURPRISE

Remember: A raid properly led and executed by well-trained, properly equipped, adequately armed personnel, will meet with success. Obviously, due to the nature of narcotics enforcement, surprise is of paramount importance.

Narcotic evidence is very readily destroyed, disposed of and concealed. So for the most part, a surprise raid is usually desired.

B. SPEED

Obviously, the quicker you effect entry to the target location, gain control of the situation, make your arrests and/or seizures, and get out of the area, the better it will be for all concerned.

In doing so, it not only indicates a professional operation, but it reduces the chances of problems arising at the target location both before and after the execution of the raid. Just as in any normal enforcement situation, crowds may gather and disrupt your operation. When involved in a lab seizure, speed is limited due to safety and cleanup requirements, so plan accordingly.

C. SIMPLICITY

Third and equally important, keep the tactical plans as simple as possible. This not only applies to the

leadership and command lines involved, but more important to the individual raid team assignments.

In a joint operation, responsibility for the planning and conducting of the raid should rest with the agency with direct responsibility for conducting the investigation and which has the most intelligence relative to the target location and the target suspects.

Very often the uniformed man on post or the sector car will have a wealth of information useful in planning the raid - don't neglect to utilize these men!

"KEEP IT SIMPLE" - we're all aware that the more complicated the plan becomes, the more room there is going to be for error. Elaborate signals and timing should be kept to an absolute minimum.

For the purposes of this section the following is stipulated:

1 - Information has been received.
2 - Identification of the suspect(s) location(s) have been made.
3 - A thorough investigation has already been conducted.

4 - It has been established that there is no alternative other than to conduct a raid.

5 - We have all of the probable cause required to make application for a warrant.

6 - We have established procedures for obtaining said warrant on short notice at our discretion.

We now come to the actual planning of the raid operation. Be aware that no two raids are the same. Consequently, initiative and common sense must be coupled with the experience in actual raid operations when it comes to planning any one raid.

The following is a suggested sequence of events for planning a raid operation.

1.) AGENCY RESPONSIBILITY

Raid teams are often made up of representatives of different agencies. This is particularly true in narcotics enforcement. Over-lapping jurisdiction and a need for additional manpower and experienced personnel may result in the raid team being made up from several different agencies. Personnel from different agencies will of course present problems in the planning and execution of the operation.

First and foremost determine which agency will in fact have the prime responsibility for the raid operation. Once this agency is selected, it should be fully supported by the other participating agencies and the authority of the chosen agency should not be disputed.

The responsibility for the planning of the raid should include all raid plans, execution of the operation, security of the target location after the completion of the raid, the

maintaining of the chain of custody of the evidence and clean-up operations in the case of a Clandestine Laboratory.

The responsible agency should then proceed to establish specific duties for the other agencies involved, lines of authority, and communication should be also established.

All details concerning the foregoing should be settled before proceeding to the next step in planning a raid operation.

2.) SELECTION OF A RAID TEAM LEADER

Any planned police action which involves the use of weapons and the possibility of injuries must be well led. Within the framework of a single agency or a unified law enforcement command, a raid team leader will be selected. Unlike the military where a leader is selected by his rank, the selection of a leader and a team to carry out a specific raid operation can and should be given more leeway. This selection process is particularly important when raiding a Clandestine Laboratory due to the hazards present and the technical skills required of team members.

Emphasis should be placed on those men with prior experience in conducting a specific type raid, knowledge of the target location and knowledge of the suspects to be apprehended. The raid team leader must command the confidence of the team members and in turn must have confidence in, and knowledge of, the capabilities of the raid team members to be selected.

The raid team leader regardless of which agency he represents, should command the overall operation and have

the authority to make decisions and issue orders binding upon all agencies involved in the operation.

Be aware that the final control of the entire operation must rest with the ranking officer assigned, but the raid team leader should be the man responsible with regard to the actual planning and execution of the raid itself.

Obviously, in a joint operation we are handicapped to a degree, due not only to the differences in laws, but differences in training, experience, extent of prior cooperation and the fact that personnel involved may never have worked together in the past nor do they know one another.

Failure to cooperate or to obey orders, after the raid operation has commenced will lead to failure of the raid, and possibly to injuries. Jurisdictional disputes should be settled during the planning stage of the operation.

3.) SELECTION OF A RAID TEAM

Here again, rank and seniority should be of little consequence. As in the case of selecting the raid team leader experience and ability should be used as the criteria in selecting the raid team. The raid team leader has the final word as to the selection of his team members.

The leader should select experienced men who are known to have good judgement and mental stability, men who are not easily excitable, and who will obey orders. Within this framework, the men should be selected for their capabilities and special skills. We might for a moment review a few of the areas that might be considered:

1 - Strong individuals for the heavy-work (breaking a door, etc).

2 - Individuals trained in Clandestine Laboratory raid procedures and equipment.

3 - Men who excel in the use of firearms.

4. - Include officers directly involved in the case.

5 - Technicians (Evidence, photo, fingerprints and chemists).

6 - A man to record all of the details of the raid (Court).

7 - Unusual skills such as:

a. Dog Handlers.
b. Language capabilities.
c. Scuba diving.
d. Scaling.
e. Appearance (subterfuge).
f. Technical equipment.

It is of course imperative to keep the number of team members down to a manageable level consistent with the mission at hand.

Attempt to select men who are known to one another, or if this is not possible make <u>sure</u> that all of the men get to meet face to face.

Keep all information concerning the proposed raid operation on a need-to-know-basis.

Except for significant policy decisions, attempt to eliminate high-level planning if at all possible. Keep the planning among the immediate members of the raid team. High level planning will be too far removed from the specific details of the operation and the plan itself may suffer.

Along with choosing the leader and the team members, be aware that outside support personnel may be required, although they are not considered to be members of the actual raid team. Examples of the type of outside support you might want to consider are:

1 - Medical personnel/ambulances.
2 - Fire Department personnel/equipment.
3 - Motor vehicle operations for equipment trucks, etc.
4 - Uniformed law enforcement personnel for use in back-up. (This is especially true when the agencies conducting the operation are not in uniform). This uniformed back-up will provide perimeter and road-block functions and identify the operation to the public.

Prior approval is required to allow non-enforcement personnel to accompany the raid team. For example: media people.

4.) PHYSICAL TARGET SELECTION AND POSITIVE IDENTIFICATION

The initial selection and identification of the target location and the target suspects should of course have already been well established and documented through the ongoing investigation being conducted by the agency that initiated the case, and is now requesting that a raid operation be conducted.

PHYSICAL TARGET:

Too many times we assume that the target location has been positively identified during the course of the investigation, and we don't update the intelligence for the benefit of the raid team members. We're all aware that this is a faulty assumption. It's only through proper planning that we are going to be able to minimize potential errors.

It is essential that the location to be raided must be described in detail on the application for the warrant...but errors can still be made in this area.

Consequently, the raid team leader should not only make sure of existing intelligence concerning the target location submitted by the investigating agency; but after the raid team members are selected, the team leader should have them in the area of the selected target to conduct additional surveillance and gather additional intelligence, to either clarify or confirm the positive identification of the target location. This procedure will also serve the purpose of thoroughly familiarizing the raid team members with the target area.

During this pre-raid type investigation on the part of the raid team, not only should existing information be utilized along with additional surveillance, but we should attempt to utilize the following enforcement information areas available to us.

1.) Case File

The case file should be thoroughly reviewed for all available information and leads concerning suspects and target location.

2.) Undercover Officers

Utilize the undercover officer inside who is in a position to answer or to get answers to many of the questions which need to be answered prior to the execution of the raid. He can provide accurate information on both the physical location and the suspects involved.

3.) Reliable Informants

The word reliable is stressed here. Informants who have proved themselves in the past. Don't take the word of an untested informant concerning a matter that might lead to a hazardous enforcement situation. Use informants skillfully and carefully. They have access to information which you probably never would uncover through pure surveillance. They know the people involved and can find out valuable information relating to the suspects. Attempt to verify as much of the information supplied by an informant as you can.

4.) Subterfuge (Attempt to get a key raid team member into the target location)

This technique is old and tested but, it still produces results. A lot of immediate intelligence can be gained first hand by the raid team using this method to effect entry.

The possibility of gaining access to, or at least intelligence about, a target location using subterfuge is limited only by the imagination of the personnel involved. A man dressed as a reverend, could go into certain locations and simply knock on a door under the guise of collecting contributions for charity.

Other ruses that might be attempted include:

a - Building Inspectors.
b - Fire Department Inspector.
c - Utility repairmen (make sure you disconnect the utility before you go in).

d - You might also utilize the uniformed officers who normally patrol in the area of the target location. This is especially true if the target location or the building itself has been the source of many routine calls for police assistance in the past.

5.) SURVEILLANCE TECHNIQUES

There are many surveillance techniques available to enforcement personnel that are suitable for different situations. Mainly be aware that additional surveillance should be conducted by members of the raid team, and they should use techniques appropriate with the mission of the raid operation.

Simply stated it is a matter of having the raid team members access the area of the target, to determine the nature of the area, and familiarize them with the lay-of-the-land. Also to get a feel for the people living in the area and to establish patterns if possible in and out of the target location by both the suspects and other people who may reside in the area. For example: A lot of children in the area - determine school hours, schools' bus schedules etc. N.B. Isolated rural areas present some specific problems in pre-raid surveillance.

6.) OTHER SOURCES OF INTELLIGENCE

In some situations, it's possible to utilize many different non-law enforcement agencies in order to obtain intelligence concerning your target, for example:

a - Housing Authorities; Apartment leases, blueprints, rent payments, etc.
b - Special Police.
c - Property owners, and managers.
d - Telephone Company - telephone listings (listed/unlisted). Utilities.
e - Post Office - deliveries, authorized mail cover.
f - Neighbors and town merchants.

From the above sources of information, we are trying to gather all available intelligence not only to positively identify the target location, but to have a better idea of what situations the raid team may be facing.

The following are examples of intelligence information that may be required during the planning stage of a raid.

a. Geographical locations (Urban-rural).
b. Interior layouts of the target.
c. Obtain maps, photos, and sketches of the target location. Make use of commercial maps, even going as far as getting aerial photographs if the operation warrants it.
d. Become familiar with all of the approach and escape routes, to and from the target location.
e. What are the construction and peculiarities of the target locations?

1 - Will gunfire penetrate the target?
2 - Will the target pose a fire hazard?
3 - Are there fire escapes or stairs?

4 - Are there dumbwaiters, elevators, laundry chutes?

5 - Does this building have void air shafts?

6 - Are there underground parking facilities? An attached garage? Is the garage used?

7 - Is there a doorman, porters, superintendent?

8 - Determine the location of all doors, windows, and skylights.

9 - Are the windows barred, the door reinforced?

10 - Is there access from and to adjoining buildings?

11 - Which way do the doors and windows open?

f. What are the hazards in the target location that have been added by the suspects themselves?

1 - Reinforced construction of doors/windows/walls?

2 - Double doors?

3 - complicated lock systems?

4 - Look-out systems?

5 - Alarm systems?

a - Look for metallic foil, this is a giveaway to the presence of an alarm system.

b - Electric eye beams.

c - Heat sensors.

d - Floor traps.

e - Simple types of alarms (cans on a string).

6 - Guard dogs or other animals present?

7 - Booby-traps? Electrical charges rigged to door-knobs, firearms rigged to doors, rugs over holes in the floor?

g - What is the proximity of the target location to other buildings in the area? Is there access from one to the other? (roof-tops, holes in walls, basement). What are the dangers to innocent people residing in nearby buildings, as well as the target building itself? Do the suspects have an observation post on a near-by roof-top, out-building or woods.

h - Know the location of all utility shut-off points (internal/external) if possible.

1 - You might want to secure the water just prior to the raid to prevent the disposal of evidence down the drain.

2 - Secure the phone lines just prior to the raid, this is especially true if the raid is being conducted in conjunction with others at the same time. We want to prevent the suspects at our location from giving any warning to the outside.

3 - It might be feasible to secure the electricity, especially if it's been determined that there are alarm systems or electrically controlled booby-traps.

4 - If the raid operation turns out to be a seige of sorts, you might want to secure the heating/cooling systems.

i - Know the location of the internal utilities, sinks, toilet bowls, drains, light switches and the like to <u>prevent the destruction of evidence</u>.

j - Determine the mood of the people in the immediate area, as to their possible reactions to a law enforcement operation in their area.

These are just some of the important points you will want to consider when planning your raid. Your local situation, rural or urban will determine what information is required to properly plan for a well executed raid.

The time element of course dictates to what depth you can go in obtaining intelligence on the target location. Obviously, at times you may have only a few hours, while in other instances you might have several days to prepare.

N.B. It is most often better not to conduct a raid operation at all than to proceed without adequate planning.

7.) POSITIVE IDENTIFICATION OF SUSPECTS

The next aspect of the pre-raid planning is very closely tied in with the positive identification of the physical target and that is the positive identification of the suspects involved in the case.

While doing your additional investigation and intelligence gathering with reference to the physical target location, you will out of necessity be able to gather additional intelligence relating to the suspects themselves.

Now that the investigative agency has decided that it's necessary to conduct a raid it is imperative for the members of the raid team to update the intelligence relative to the suspects themselves.

SUSPECTS:

Gather as much intelligence as you possibly can about the suspects, as many of the raid plans will revolve about the reputation of the suspects.

A review of the suspects case file, arrest record and methods of operation, as well as current intelligence on the suspects, will give you a fair estimate as to what resistance you might encounter during the execution of the operation.

Utilize the same enforcement information techniques used when gathering intelligence about the physical target location:

1 - CASE FILE	4 - SUBTERFUGE
2 - UNDERCOVER AGENTS	5 - SURVEILLANCE
3 - RELIABLE INFORMANTS	6 - OTHER SOURCES

Consider the following as they pertain to the suspect target:

1 - Always assume that the suspect is alert!!!
2 - Determine the number of suspects and other persons involved.
3 - Determine the makeup of the persons involved.

a - Male b - Female c - Children d - Ages

4 - How many of the suspects can be expected to be at the target location? And at what hour?
5 - Attempt to identify the leader among the suspects.

6 - Attempt to determine the suspects capabilities. When we speak of capabilities, we must consider the following:

a - Magnitude of the violations and the classification of the suspects.

b - Are the suspects facing a long jail term, if arrested in this case? Is the suspect a convicted convict?

c - Will the suspects resist?

d - What is the physical and mental condition of the suspects?

1.) Are they professionals?

2.) Are you dealing with junkies, freaks, psychos?

3.) Are they known cop-fighters?

4.) Are they specialists in unarmed fighting?

5.) What will their reaction be to armed men breaking into their location?

6.) Are they desperate, with nothing to lose?

7.) Do the suspects have a weapons background?

8.) Are the suspects presently armed?

a - Are they normally armed? Utilize undercover personnel and informants?

b - Do they have access to weapons?

1 - On their person.

2 - At the target location.

c - What type of weapons do they have if any, as well as the quantity of ammunition?

d - Are the suspects proficient in the use of weapons?

e - consider the use of other types of arms.

1 - Booby-traps 2 - Explosives

f - Do the suspects have access to automobiles or other means of transportation?

1 - Get all registration numbers.
2 - Get a detailed description of the vehicle for seizure purposes.
3 - Locate the vehicles with an eye toward immobilizing them just prior to the raid.

In essence any and all information concerning the suspects' character, capabilities and peculiarities should be funneled to the raid team leader for his use in planning the raid.

8.) TIMING OF THE EXECUTION OF THE RAID

When we speak of timing in the general sense, our overall consideration from the start of the plan to the execution of the raid operation is, just how much time do we have to work with. There are many details to consider. However, common sense will dictate as to what depth you are going to be able to plan the operation.

TIMING, used in the specific sense, refers to "the most advantageous time to execute the raid operation", and what factors must be considered in reaching this decision.

The use of undercover agents, surveillance and informants plays a critical part in setting up the most advantageous time to execute a raid. In fact, due to the nature of their status, they might be able to have the suspects, the lab in operation, and the narcotic evidence present at the time of the raid. This depends on how well the undercover agents and/or informants have infiltrated and are trusted by the organization/laboratory you are seeking to immobilize.

Given adequate amount of time to properly plan the raid, consider the following questions as to the most advantageous time to execute the raid.

A.) In narcotics enforcement, timing is critical for the simple reasons that the narcotic evidence is not only readily destroyed; but the evidence is usually kept in one location for short periods of time. Clandestine Laboratories are often set up to run for a specific time and then move to a new location.

The only way to make money in narcotics trafficking, is to keep the produce moving toward the ultimate user, the addict. This means produce the drugs, transport the drugs, cut the drugs, and sell the drugs to users and so on.

It is critical in raid operations to have reliable up-to-date information as to when the evidence

will be at what location, for how long will it be there, what quantity, what quality and if possible where it is being kept at the location?

This information is obtained through undercover agents, reliable informants and a myriad of surveillance techniques.

B.) We must know when the suspects themselves are most likely to be found at the target location. This is critical especially in the case of an arrest situation, coupled with the seizure of evidence and/or the laboratory. If we hit a location and the suspect is not there, it will make it more difficult to locate the suspect and tie him in with the seizure.

Also, in a seizure case, it is better to come up with a defendant or two in custody, not only to strengthen the case, but they may well be utilized as informants at a later date. This information again is obtained through the use of undercover operations, the utilization of information and of course, surveillance.

C. Surprise: When is the best time to catch the suspects as off guard as possible? Also, when is the best time to minimize the danger to innocent people. And above all, when is the most advantageous time to the raid team?

<u>THE PRECISE TIME TO EXECUTE THE RAID WILL BE DETERMINED BY</u>:

A. The time needed to allow the raid team to be prepared and get into position.

B. When the suspects have been found to be most vulnerable. A time should be selected based on intelligence gathered in order to minimize the suspects mental alertness and capacity to react forcefully.

C. The evidence/drugs are at the location and/or the Clandestine Laboratory is in operation.

9.) EQUIPMENT NEEDS:

Each raid will have its own particular equipment requirements based on the nature of the raid, the resistance expected, and the methods decided upon to execute the raid. An attempt will be made to cover all the possibilities with regard to the utilization of equipment. Be aware that this will not be an all inclusive listing. The equipment available to you is limited only to the imagination of the raid team itself. A great deal of the equipment may have to be borrowed from other agencies or otherwise acquired and shared with other agencies. It cannot be expected that one agency will have all the necessary equipment on hand, especially to support a large joint operation.

MAJOR EQUIPMENT NEEDS:

In an attempt to cover various situations, let's identify possible equipment needs regardless of whether or not it is a day or night operation, or an urban or rural operation.

1.) TRANSPORTATION

TRANSPORTATION (to and from the target location).

a.) For the raid team and equipment.

b.) Provide for the transportation of the suspects.
c.) Provide for the transportation of evidence seized.
d.) Do you want marked or unmarked vans/autos - or a mixture?
e.) Is there a need for sound, lighting, or communication type vehicles?
f.) You might consider having a medical and/or fire unit on the scene.
g.) Pursuit vehicles should be designated in the event of a break-out by the suspects.
h.) In the event of a lengthy operation, consideration must be given to transport food, water and additional equipment to the scene of the operation.
i.) Clandestine Laboratory clean up contractor.

Some of the above may seem a bit far fetched to those who have participated in various type raids. But, as stated before, they are listed to stimulate thinking of planning requirements.

2.) PERSONAL EQUIPMENT

A - For those of us who operate in a plainclothes capacity, we should establish a standard means of identifying ourselves to one another during the raid operation.

1 - Identifying coveralls.
2 - Identifying baseball caps.
3 - Head or arm bands.
4 - Use of uniformed personnel in a back-up status.

B - All personnel should be armed with their personal firearms, as per agency policies.

C - The use of and/or display of the right weapons at the right time will often eliminate injuries on both sides. The suspects may realize that they are going up against a well disciplined, well-armed group of men, and may well decide against putting up any resistance. As a result, you might want to consider some of the following suggestions:

1 - Fully automatic weapons - These are a bit impractical, not accurate, tend to jam, and may cause unnecessary injuries. But they do, have a great psychological effect.

2 - High-powered telescopic rifles - Especially good for suburban and rural operations, as well as for use as controlled anti-sniper work in the urban areas. Due to the range and the power of these weapons, their use in raids in a built-up area must necessarily be restricted to rigidly controlled situations.

3 - Shotguns - Considered by most enforcement officers, to be the best all around weapon for our purposes. This weapon not only has the necessary firepower and psychological effect, but its capabilities and uses are all but limitless. We can avail ourselves of all of the various types of ammunition from single rifled slugs, to tear gas shells to 0 and 00 buckshot, to tracers and to the very smallest buckshot. The shotgun is a fine all-around, easily maintained and easy to train with weapon, for enforcement use. You might want to consider the sawed-off or cut-down models available to enforcement personnel.

4 - An attempt should be made to standardize the weapons and ammunition to be used in a raid operation. This will not only ease the re-supply

problem, but the exchange factor between members of the raid team might well be critical during a fire-fight.

i.e. - A man with a .45 trying to get shells from a man armed with a .38.

N.B. - In all cases regarding firearms, be guided by the agency policies concerning same.

D - Personal Medical Kit.

E - Light - Even though a raid can be conducted in the daylight hours, a flashlight is essential. entering a building not knowing what the lighting conditions are going to be can be a problem without a light. Often when we enter a building in broad daylight we find the interior of the building pitch black.

F - Protective equipment - There are many possibilities here. Many good types are available commercially. Most of it is comfortable even though worn over long periods of time.

1 - Body armor.
2 - Helmets.
3 - Visors or goggles.
4 - Gloves.
5 - Heavy duty shoes.
6 - Personal Protective Equipment (PPE) required in a Clandestine Laboratory raid.

G - Night sticks or batons - for use if firearms are not warranted in a given situation.

H - Gas - Toxic chemical protective equipment.

I - Field glasses.

J - Hand radios - be sure the batteries are up and you have the correct frequency. (No spark equipment for laboratory raid).

K - Spare handcuffs with keys. Six prisoners and only two sets of cuffs is a problem.

L - Reserve ammunition.

M - A sketch of the interior of the target (cover and entry details). Photos of the suspects should be available at this time.

3.) ENTRY TOOLS.

This should be included in the usual complement, augmented by any special tools as required by the nature of the operation.

a.) Door slams.
b.) Crow bars.
c.) Sledgehammers.
d.) Hyalogen tools.
e.) Battering rams.
f.) If you are in dire need of proper entry tools check with the local fire department. They have most tools you will need right on the fire trucks.

4.) SPECIAL EQUIPMENT

a - Gas and toxic chemical equipment, with personnel trained in its use.
b - Cameras and film, polaroids are good and dependable.
c - Rope.
d - Narco Test Kits - for field testing the substances.
e - Fingerprint equipment along with qualified personnel.
f - Evidence containers (many).
g - Report writing supplies for the man assigned to record the raid operation.
h - Qualified Chemist - especially necessary at the scene of a raid on a Clandestine Laboratory.
i - Video tape equipment and qualified personnel.

PRE-RAID BRIEFING

During the course of all of the raid planning, there would have been numerous meetings among members of the raid team, the raid team leader and superiors assigned. But the meeting we're concerned with at this time is the final, all-hands briefing immediately prior to the raid. All members of the raid team must be present, or the full value of the briefing will be lost.

At this briefing, it is essential to cover the following items, even though some of them may seem repetitious. Remember the purpose of this briefing is to finalize all plans and answer all questions concerning the entire raid operation.

1 - IDENTIFY THE RAID TEAM LEADER(s)

He should of course be conducting the briefing.

2 - IDENTIFY ALL MEMBERS OF THE RAID TEAM(s)

By this point in the planning, all members should be familiar with one another. Be certain that all are aware of the system established to identify one another during the execution of the operation.

Be certain to have uniformed officers present at the scene for back-up. Be sure that the proper authorities within the local agency know of the operation - to prevent them from responding to calls from concerned citizens.

3.) GENERAL INSTRUCTIONS

This is the who, what, where, why, when and how of the operation.

a - Mission - Make sure everyone is aware of the specific nature of the operation, identify the physical target, identify the suspect target, and be specific about the nature of the evidence you are seeking.

b - Target - Be precise in the identification of the target, back it up with motion pictures, photos, maps, sketches and the like.

c - Timing - Be specific. Give the exact time that the raid team is to be at the pre-selected assembly point, allowing time for the raid team to get from the assembly location to the target location and get into position.

d - Tactics - Go into depth as to the tactics to be employed and the methods decided upon to effect entry into the target location. Let's review the options open for selection.

1 - Warning - For use against a fugitive/conspiracy suspect, when the seizure of narcotics is to be a secondary concern. Use a loud speaker, or use telephone (record the conversation).

2 - Surprise - This is a dangerous but effective tactic. This tactic is normally used against a well armed, alert, desperate suspect. This tactic is the most dangerous because you are in effect, going to be inside the target location before you know what the suspects reactions are going to be.

3 - Subterfuge - This tactic is closely tied to the tactic to obtain surprise. Personnel selected for this tactic or who suggest same must not only fit the ruse they are attempting, but they must be quick-witted and resourceful. i.e. The telegram trick is fine, until the suspect tells you to slip it under the door.

4.) EQUIPMENT CHECK

a. Is all of the necessary equipment on hand and operational?

b. Are all members of the raid team familiar with the operation of the equipment they will be using? This is especially true when equipment has been borrowed from another agency and may be new to some of the raid team members or in executing a raid on a Clandestine Laboratory.

5.) TEAM ASSIGNMENTS

A - PERIMETER DETAIL

The least experienced men, with reference to raid operations, along with uniformed personnel should be utilized on this detail. Their function is to secure the area surrounding the target location.

1 - Seal the area through the use of road-blocks.
2 - Control any crowds that may form, and keep them away from the scene of the operation to prevent not only injury to them, but to protect the integrity of the operation.
3 - They may be used as support personnel in the event of an extreme emergency.
4 - They should be in possession of pursuit vehicles, in the event that the suspects break out of the target location.
5 - You might consider having a helicopter on stand-by if the operation calls for it.

B - COVERING DETAIL

This detail is responsible for sealing the outside of the immediate target location, and to prevent not only the escape of suspects from the target, but prevent unauthorized people from entering the

target location after the operation has begun. They do not enter the target location except in extreme emergencies and then only on the command of the raid-team leader. This covering detail might also include an Observation Post (O.P.) in a suitable location so as to have a commanding view of the entire location.

C - SUPPORT DETAIL

This detail should be positioned just immediately outside the specific target location (for example, covering the internal stairwells and hallways on the floor where the target is located). Or, in the case of a single dwelling take up positions immediately outside in order to seal all of the escape routes from the target. These men not only lend support to the entry detail, and prevent escape of the suspects, but they too are in a position to witness any evidence being disposed of to outside of the target location.

D - ENTERING DETAIL

This assignment is of course, the most dangerous in that these are the men who are going to effect entry into the suspects location by pre-determined methods, and secure the premises for the search detail. The entry detail should consist of your most experienced personnel. These are men who are known to one another and have worked together in the past. The fewer members of this detail the better in line with the nature of the mission. You do not need nor want fifteen (15) armed men entering a location containing only one suspect.

This detail should have already conformed to the established procedure of identification of raid team members, but they might further strive to enhance the appearance of professional enforcement officers, (i.e., badges on outer garments).

E - SEARCHING DETAIL

After the target location has been secured, the search detail should be ordered into the target location by the raid-team leader. This detail is then responsible for conducting a thorough, systematic search of the target location. The search detail should include the agent holding the warrant (if he was not a member of the entry team), evidence technicians, and other specialists knowledgeable about locating and identifying evidence. For example: The chemist, in a Clandestine Laboratory operation. In a laboratory operation, the hazards are assessed after the laboratory is secured and prior to search team entry.

6.) SPECIAL INSTRUCTIONS AND ASSIGNMENTS

This time should be used in cases where the nature of the operation requires special approaches or unusual techniques.

For example:

A - The undercover man is going to be present at the target location. Raid-team members should know his identify, and be aware of the instructions as to how he is to react during the raid. Should he

be treated as a suspect to protect his identity? or, will he assist the entry and search details?

B - Is the informant going to be present at the target location? If so, his identity should be made known to the raid-team members. What are his instructions to be?

Both the informant and the undercover agent might well be introduced at the pre-raid briefing.

C - Is there special equipment to be utilized? For example: A Clandestine Laboratory. Be sure that the people who are to use this special equipment have the proper training and the equipment is available. Is a hazardous waste contractor on call?

D - Signals - Minimize the use of signals if at all possible. In this age of miniature radio gear, each man should have his own communication with the raid team leader. Keep in mind the requirement for specially configured (for safety) commo equipment in Clandestine Laboratory raids.

E - Be very specific as to the nature of the narcotic evidence being sought. The nature of the drug may determine the amount of surprise necessary to prevent its destruction, and may aid in determining where the evidence is hidden. Let it be known if the evidence sought is dangerous in any way, LSD for example. Keep in mind the danger of acids and other chemicals.

F - Give a detailed description of any autos used by the suspects. This is most important, for if it can be shown that the autos were in any way used to facilitate narcotics trafficking, they may be seized and put to use by the Seizing Agency. It is imperative that an accurate, detailed description of the auto be given aside from the registration tags, which can be readily changed.

G - Execution of the warrant: Be sure it is known who is in possession of the warrant. He should be in the entry or search detail.

H - Post-entry assignments. After the raid has been terminated, assignments should have been made as to:

1 - Custody and handling of prisoners.
2 - Custody and handling of evidence. (Maintain chain of custody).
3 - Custody and handling of seized vehicles.
4 - Handling of additional suspects who arrive on the scene during or at the conclusion of the operation.
5 - Means of transportation away from the target location and back to the assembly point.
6 - Procedures to follow for either safeguarding the target location or placing surveillance at the location.
7 - Clean up procedures at a Clandestine Laboratory.

A brief summary of the entire operation should be made by the raid-team leader. He should answer all questions asked by

members of the raid-team and he in turn should ask questions as to individual assignments.

RAID EXECUTION

Effective planning and the use of common-sense will go a long way toward assuring a successful raid. But planning alone will not get the raid executed.

Let us now go over the mechanics in the execution of a raid. Participation in a raid operation is one of law enforcement officers hazardous duties. A well planned, well led raid will achieve the desired results and decrease the danger to the personnel involved.

At the end of the pre-raid briefing, or as soon as possible thereafter, the raid operation should commence, for the following reasons:

1 - The information is fresh in the minds of the raid-team members.

2 - The raid-team will be alert and in the proper frame of mind to execute the raid.

ON TARGET PROCEDURES

1 - All members of the raid-team and support personnel report to the pre-selected assembly area at the assigned time.

a) Public building, school, warehouse, post office, barn, adjacent farm, campsite, motel etc.

b) The location of the assembly point should have been selected for its usefulness in covering the nature of the operation and/or its proximity to the target.

2 - At this time, all of the last minute updating of intelligence can be given and any last minute difficulties taken care of.

3 - Safeguard all vehicles and equipment that is not immediately needed at the target location, assign men to remain with this equipment.

a) Make sure all keys are left with the vehicles.

b) Direct communication with the target location is a must in the event there are equipment needs at the target.

4 - <u>The perimeter detail</u> should now proceed to their assigned positions in order to seal off the area.

a) Road-blocks set up.

b) Pursuit vehicles manned and ready.

c) Safeguard the equipment assigned.

5 - The Covering, Support and Entry details should now move directly to the target location, using as much cover and concealment as is available.

6 - When arriving directly to the target location, the raid-team should remember the following:

a) Do not go roaring in with lights and siren blazing away.

b) Avoid screeching brakes and slamming car doors.

c) Avoid unnecessary use of lights and shouting.

d) Secure and lock autos.

7 - The covering detail should take up assigned position, surrounding the immediate area of the target location. (External).

a) Cover all escape routes from the target.

b) Observation posts, with a commanding view of the target.

c) Prevent anyone from entering or leaving the target.

d) Attempt to render suspects autos inoperative.

e) Render all disadvantageous lighting inoperative. (Farm yard lights or Streetlights).

f) Secure all external utility connections (phones, water).

g) Notify the raid-team leader when in position.

8 - The support detail accompanied by the entry detail should now enter the target location (building). Observe the target for any signs of activity within the specific target.

a) Do not bunch up at the entry point. This makes for a great target.

b) Have weapons at the ready.

c) If possible, allow a short time for the eyes to adjust to the interior lighting.

d) In most cases, do not use more than one entry point especially during a night operation. All means of escape should now have been sealed by the covering detail immediately outside the target location.

9 - The support detail should immediately take-up their assigned positions within the target location and perform their assigned duties.

a) Secure the internal stairs.

b) Secure other egress routes-dumbwaiters, laundry chutes, etc.

c) Secure internal phone and water lines.

d) Secure the immediate area of the apartment and warehouse area from adjoining areas, rooms, or floors.

e) Darken the area, meaning the hallway in the immediate point of entry into the target (eliminates you being silhouetted).

f) Take good cover positions with a good view of the entry point.

g) Notify all details inside and out that all are in position. The raid-team leader will normally be with the support detail if not the entry detail.

Keep in mind that many of the suggested procedures will out of necessity be changed to conform with the pre-decided method of entry and the nature of the target. <u>For instance, in the case of a private dwelling</u>, farm house or campsite entry might be

effected directly into the specific target location, thereby excluding the necessity for an internal support detail.

This section is meant as a guideline rather than a hard fast procedure to follow. Obviously, common sense in the planning is the key note.

Prior to the actual entry into the specific target location, all details should be in position and the raid-team leader be advised of the same.

ENTRY PROCEDURES

We are aware of the numerous methods of gaining or forcing an entry into a location, warning, surprise, subterfuge, knock and no-knock warrants. The method to be used will have been well established before the raid-team arrived at the target location. (Some leeway must be given in the plan to allow for on the scene changes by the raid-team leader at the target location in the event of a critical reason). The methods open to us to effect entry are infinite. Each raid has its own inherent problems and peculiarities which will dictate the method to be used.

After it has been determined that it is necessary to effect a forced entry.

a) BE SURE THERE IS NO EASIER WAY!!!

b) The place may appear to be a fortress, but human nature being what it is there may well be an open window right into the target or an unlocked door.

After the raid-team leader has determined that all of the details are in position, he will give the entry detail the signal to proceed as planned.

Whatever the decided upon method to effect entry, do it as quickly and forcefully as is necessary, allowing the suspects a minimum amount of time to react to the entry.

The immediate situation confronting the entry detail will of course, depend on the actions of the suspects, and there is no way to tell exactly when this is going to happen, until you are inside the target.

The entry detail might be confronted with one or more of the following situations, or a combination of several of these situations:

a) Absolutely no resistance.

b) They might be fired upon.

c) The suspects might attempt to escape.

d) The suspects might decide to physically resist.

e) The suspects might attempt to destroy or dispose of evidence.

f) The suspects may in some other manner attempt to cause harm to members of the entry detail.

<u>It Is Imperative To Keep All Of The Details Advised of the Status of the Operation. This is Especially True at the Time of Entry</u>!!!

There are several points that might be of value to think in terms of what might be done when you encounter certain situations while attempting to gain entry or immediately after gaining entry to the target location.

1 - If surprise is lost, light up the entire area inside and out to show the suspects the hopelessness of resisting.

2 - If silent entry is your goal, make sure the men have the appropriate gear to suppress noise during entry.

3 - Stay close to walls while climbing stairs or walking in a hallway.

4 - Be mindful of squeaky floors and hinges.

5 - If you make a noise-STOP-if undetected proceed. If detected drop to the floor facing the source of the danger with your weapon out in front of you.

6 - Upon entering a darkened room, get in as quickly as possible to avoid a silhouette at the entry point. If time allows, let your eyes adjust to the lighting or lack of lighting in the room. A small point-before you enter a darkened room. Cover your watch dial...in a dark room, it's like a beacon.

7 - Hand guns and sawed-off shotguns are appropriate in an inside confrontation, especially in the dark.

8 - Obviously, the fewer members of the entry team in the room under these conditions, the better it is for the safety of the personnel concerned.

9 - If a silent entry has been effected and you are fortunate enough to find the suspect(s) asleep, approach them from behind the bed. Put a strong light in their eyes and then awaken them.

If the raid plan calls for the target to be isolated and the suspects notified of the presence of the police in hopes that they will exit and surrender, plans must be formulated well in advance to cover the very strong possibility that they will choose to resist instead. In a raid plan such as this , you might want to consider the following:

1 - An organized assault. No one man heroics. (Last resort).

2 - The use of tear gas might be your first consideration, bearing in mind the effect that it might have on innocent people, especially in an urban setting.

3 - The availability of proper support weapons and equipment with personnel trained in their use.

4 - Have your fields of fire established to avoid crossfire.

5 - Make use of all available cover. Be sure the cover will deflect or stop small-arms fire.

6 - Have strict control over the firing discipline of your men.

7 - Consider the use of highly trained personnel, firing from positions out of range of the suspects weapons (high-powered rifles outfitted with scopes).

8 - Do not bunch up.

9 - Have proper clothing on hand. (Rain gear, camouflage suits for rural work).

10 - Have pursuit vehicles manned and ready.

11 - Have powerful lighting equipment on hand.

12 - Wait them out if no one is endangered.

THE ENTRY DETAIL

The following are duties usually assigned to the entry detail?

a) Effecting entry to the target location.

b) Identify themselves and state the purpose of the entry.

c) Gaining control of the suspects.

d) The securing of all weapons found in the target location.

e) Preventing the destruction of evidence.

f) Establishment of order inside the target.

g) Search for weapons and contraband all suspects and place them under guard.

h) Advise all members of the raid-team as to the present status of the operation.

At this time the raid-team leader calls on his search detail. This detail is a completely separate detail and they are the only ones who should attempt to conduct a search of the target location, otherwise there will be confusion and evidence will possibly be overlooked.

SEARCH PROCEDURES

The number of personnel conducting the search should be in line with the size of the area to be searched. The search itself must

be systematic, thorough, and swift, with an eye towards getting out of the target location as soon as possible, with a minimum of damage.

1 - The agent in possession of the warrant should aid in the search and perhaps be the one assigned to take notes during the search. This limits the number of people who will have to testify in court.

2 - Begin the search with the suspects themselves. Call a policewoman or a female agent to the scene if there are female suspects to be searched. (Suspects have only been frisked up to this point).

3 - Each suspect should be questioned separately after having been advised of their rights. They may prove to be helpful in locating evidence.

4 - A complete physical description of the suspects should now be noted, including their clothing.

5 - Attempt to determine the ownership of the target location.

Now an orderly systematic search of the target location should be conducted.

1 - Two different members of the search detail should search the same area at different times to prevent any evidence from being overlooked.

2 - Attempt to minimize any damage to the target location.

3 - The spiral method of searching is to start in the center of the room and work outward in ever widening circles and is one systematic method of searching.

4 - As Evidence is uncovered:

a) Make note of the location in which found.

b) Field-test the substance found.

c) Photograph the evidence.

d) Label and witness the evidence.

e) Safeguard all evidence.

f) Maintain the chain of custody of the evidence.

g) Attempt to determine the ownership of the evidence.

5 - Seek additional evidence or intelligence during the course of the search of the target location.

a) Phone and address books.

b) Phone numbers written on the walls, etc. Write down as much of this information as you can, and do it in a manner that the suspects do not see it, otherwise the value of the intelligence might be compromised by the suspects.

6 - Safeguard all valuables found at the target location. Give a receipt for all items removed from the target location.

7 - Inventory all damage caused during the search, and have the owner of the location witness it with his signature.

8 - Sums of money found at the target locations, may be seized and forfeited.

9 - Photograph the premises.

CONCLUSION OF THE RAID OPERATION

Upon the completion of the search and when the raid-team leader determines that the raid has reached its conclusion, all units are to be notified of that fact, and beginning with the inside units, the raid team will begin to depart from the target location.

1 - Suspects removed while in custody.

2 - Evidence removed with care taken to maintain the chain-of-evidence.

3 - The raid team is removed from the target location.

All of the above should be accomplished through pre-arranged procedures, with the transportation facilities being brought in as close as possible to the target location.

All raid team personnel should report back to the assembly point, where a head count must be taken and equipment checked in.

During the planning stages of the raid operation, plans should have been formulated as to how to handle the target location upon the conclusion of the raid:

1 - Leave uniformed personnel to safeguard the location.

2 - Leave surreptitious surveillance at the target location.

   a) Identify other persons who might attempt to enter the location and remove evidence.

   b) To apprehend additional suspects as they arrive at the location.

3 - In all cases safeguard the location.

<u>As soon as possible after the Conclusion of the Raid a Debriefing should be held while the information is still fresh in the minds of the Raid Team Members</u>.

All members of the raid team should be closely questioned for pertinent information relating to the raid operations and notes made as to their observations.

All reports should be submitted as soon as possible after the completion of the debriefing, and they should be disseminated as per established procedures.

<u>Evaluation: We should learn from our Raid Experiences</u>

A critique of the tactical raid plans should be made. An attempt should be made to identify both strengths and weaknesses in the

plan, and how we might incorporate improvements in future plans. Problems encountered in the field should be analyzed and noted on the copy of the tactical plans.

A complete analysis of all tactical plans should be made, and along with the tactical plans themselves, will prove to be of great value in future operations.

*REFERENCE NOTES FOR MODULE III, LESSON NO. 1

ELEMENTARY TOXICOLOGY

I. INTRODUCTION

A toxic material is a material which in relatively small quantities is capable of producing detrimental effects in a human body. The effects may be temporary or permanent, immediate of delayed, mild or severe.

II. BASICS OF TOXICOLOGY

A. Entry into the Body.

There are three main ways in which a toxic material may enter the body. In order of importance they are: inhalation, absorption and ingestion. Multiple routes of entry may be used in some situations.

1. Inhalation - The most common route of toxic material entry is by inhalation via the respiratory tract.

   (a) The respiratory tract is divided into three regions:

   * Upper Airway - Extends from the nose to larynx.

   * Lower Airway - consists of trachea, bronchi and lungs.

   * Alveoli - Is the basic functional unit in the lung and the primary location of

gas exchange.

(b) Factors influencing the exposed areas response to inhaled toxic particles.

* Arrangement and physical dimension of the respiratory track.

* Breathing rate and depth.

* Physical nature of particle size, the surface area exposed, solubility and the ability to and retain moisture in the exposed area.

* Reaction of the body to the dissolvable component of the toxic particle.

(c) The respiratory tract may be used as a route for toxins to reach other organs. Example: Mercury can be absorbed through the respiratory tract and cause effects to other parts of the body.

(d) Various factors affect the rate of absorption of toxic material from the air in the lungs into the bloodstream:

* Water soluble (dissolvable) toxic materials pass through the lungs so fast that they can not be detected in the lung.

* Low water soluble (dissolvable) toxic gases are not soluble in the upper

airways therefore, the gas penetrates into the lower airways to produce an irritation, inflammation and swelling of the lungs.

* Fast acting irritants may produce immediate and long term effects. The long term effects may develop in organs or tissues remote from the respiratory tract.

* Slow acting irritant gases act as potential carcinogens with respect to the extremely low concentration and several months of exposure.

* Fat soluble gases pass through the lung into the blood to be distributed to the attracted organ.

2. Absorption - Absorption of toxic materials occur through the penetration of the skins' sweat glands, oil glands and hair follicles of skin.

(a) The ability of skin to absorb toxic materials depends on:

* Type and health of skin.

* Chemical properties of the toxic substances.

* Particle size.

* Environment in which absorbed.

(b) Absorption of toxic material is enhanced by:

* Breaking of the top layer of skin by abrasions or cuts.

* Increasing the hydration (moisture level) of the skin.

* Increasing temperature of skin which causes:

  - Sweat cells to open up and secrete sweat, which can dissolve solids.

  - Increase blood flow to skin increases absorbtion.

(c) Absorption of a toxic material through the skin can lead to:

* Local effects such as irritation through direct contact.

* Systematic effects throughout the body.

3. Ingestion - Ingestion occurs through mouth contact with the toxic materials on persons' hands, drink and on cigarettes.

(a) Ingestion toxicity is second to the intake of toxic materials by inhalation.

* Absorption into the blood system is poor.

* High acidity in the stomach (pH 1-2) destroys most chemicals.

* Alkaline juice in the small intestine will neutralize most chemicals.

* Chemical conversion of the substance in the body occurs which may create a harmless material.

(b) Absorption of the toxic material is low:

* The toxic material is diluted by food and liquid.

* Absorption in the body of the toxic material is selective.

* The liver detoxifies some toxic materials.

(c) Materials ingested pass through the stomach and may be absorbed into the blood stream. After absorption into the blood stream, the toxic material may move directly to the liver or other organs or tissues.

B. Effects in the Body.

Toxic materials affect the human body in various ways depending on the method of contact and the type of containment.

1. Physical Effects.

(a) Toxic materials that have a solvent action can produce a dry, scaly and cracked skin.

(b) Toxic gases, vapors and liquids may cause irritation of the nose and throat. These toxic materials have also been known to erode teeth and produce changes in hair structure.

(c) Physical contact of a toxic material to the lungs and intestines may lead to inflammation, or produce contraction. In the upper tract the irritant may induce vomiting, further down, the irritant may induce abnormal intestinal contraction and defecation.

(d) Carbon dioxide and other inert gases can displace oxygen leading to suffocation, lung hemorrhage and nerve and brain damage.

C. Types of Exposure.

An exposure to a toxic material may be acute or chronic.

1. Acute - An acute exposure to a toxic material occurs in a short time period with a high concentration of the toxic material.

(a) The human body will display an immediate or delayed reaction to the toxic exposure. Example: Acid vapor.

2. Chronic - A chronic exposure to a toxic material occurs over a extended time period with a low concentration of the toxic material.

(a) A latent period usually occurs prior to the

human body's response to the toxic exposure.

(b) Chronic effects on the body may be reversible or irreversible.
Example: Asbestos

D. Degree of Toxic Exposure.

The effect of the toxic exposure to the human body primarily depends on the type of chemical, concentration of the chemical, and the duration of the exposure.

1. Type of Chemical.

(a) A toxic effect on the human body varies from one chemical to another.

(b) Many toxic chemicals are nonselective in their action on the human body. Other toxic chemicals act specifically on certain areas of the human body.

2. Concentration of the Chemical.

(a) If the concentration is low, there may be no effect on the body.

(b) High concentration of a chemical may have adverse effects on the body depending on the type of the chemical.

3. Length of Exposure.

(a) The toxic effects of a chemical are dependent

on the length of exposure. The longer the exposure, the more opportunity for entry into the body.

E. Measurement of Toxicity.

A toxic material that is normally thought of as "harmless" may induce a toxic response if added to the human body in sufficient amount. Toxic potency is defined by the amount of the toxic material and the response that is produced in the human body.

F. Factors Influencing Toxicity.

Many factors affect the normal dose/response relation--ship and should be considered when applying toxicity data to a specific situation.

1. Route of Exposure - The route by which a toxic material enters the body determines how much is absorbed and which organs are exposed to the highest concentration. For example, the amount of chemical that is toxic orally may not be as toxic when applied to the skin.

2. General Health - Some toxic materials may be more toxic to one person than another person based on the person's individual state of health.

3. Sex - Some toxic materials may be more toxic to one sex than the other. Differences in body fat content, metabolism and reproductive systems can influence the behavior of chemicals in the body.

4. Age - Older people, children and infants have

variations in body systems and metabolism, which change the disposition and toxic effects of chemicals.

5. Combining of Chemicals - When combined, some chemicals produce different effects from those attributed to each individually.

6. Genetic - People are not born genetically equal. Some lack genes which produce enzymes that can alter the toxicities of some chemicals.

7. Environmental Factors -

   (a) Increased and decreased environmental temperature influence a toxic response.

   (b) Increased or decreased barometric pressures may cause changes to the oxygen level in the environment, which in turn can influence the bodys' response to a toxic material.

   (c) Radiation is known to affect the bodys' system and influence the distribution and action of toxic materials.

G. Toxicant Distribution.

Toxic materials enter the body to produce damage. Within the body, the damage is dependent on the distribution of the toxicant within the body, the rate of metabolism, and the rate of excretion of the toxicant.

H. Definitions of Toxic Materials.

Each toxic material has a definition that describes the specific physical state of the substance. To communicate effectively, these terms are not to be used interchangeably.

1. Fumes - A fume is formed when a solid material, usually a metal, vaporizes and condenses into fine particles in air. Fumes have a tendency to aggregate into a mass and produce larger particles.
   Example: Lead suspended in air.

2. Smoke - Smoke is formed from incomplete combustion which consists mainly of carbon and other organic matter.

3. Aerosols - An aerosol is a relatively stable suspension of solid particles or liquid droplets in a gaseous medium. The particle size varies.

4. Mists - Mists are liquid aerosols formed by condensation of a liquid into particles. Many particles are visible.

5. Gases - A substance which is in the gaseous state at room temperature and pressures.

6. Vapors - The gaseous phase of a material which is ordinarily a solid or liquid at room temperature and pressure.

7. Dusts - A dispersion of solid particles usually resulting from the fracture of larger masses of material such as in drilling, crushing or grind

operations. Dust is identical in chemical composition to the parent material.

III. CHARACTERISTICS OF TOXIC HAZARDS

A. Respiratory Toxins.

The respiratory tract is the only organ system with vital functioning elements that are in constant, direct contact with the environment. The lungs have the largest exposed surface area of any organ. Many toxic materials can produce acute or chronic diseases of the respiratory tract when they are inhaled.

1. Oxygen Deficiencies.

(a) Oxygen deficient atmospheres have less than the normal percentage of oxygen found in air. Normally, air contains 21% oxygen. Common practice is not to enter into an atmosphere which contains less than 20% oxygen. No one should enter an atmosphere that tests less than 16% oxygen unless the individual is wearing an approved respirator. In a situation of sudden entry into an area containing little or no oxygen, the individual usually has no warning symptoms and immediately loses consciousness.

PHYSIOLOGICAL EFFECT OF OXYGEN DEFICIENCY

% Oxygen (by volume) at Sea Level	Effects
21	Nothing abnormal.
16-12	Increased breathing volume. Accelerated heartbeat. Impaired attention and thinking. Impaired coordination.
14-10	Very faulty judgment. Very poor muscular coordination. Muscular exertion brings on rapid fatigue that may cause permanent heart damage. Intermittent respiration.
10-6	Nausea. Vomiting. (Inability to perform vigorous movement, or loss of all movement). Unconsciousness, followed by death.
-6	Spasmatic breathing. Convulsive movements. Death in minutes.

2. Not only can various chemicals affect the respiratory tract, but the tract is also a route for chemicals to reach other organs and cause systemic effects.

B. Systemic Toxins.

To produce a systemic effect on the body, a toxic

material must be absorbed and distributed inside the body to an organ distant from the entry point. Most toxic materials produce systemic effects.

Most toxic materials attack one or two organs, the target organs of the toxicity, and other organs to a less degree.

1. Target organs in systemic toxicity:

   (a) Central Nervous System - is the target organ of toxicity most frequently involved in systemic toxicity.

   (b) Circulatory System - next in order of systemic toxicity. The blood system can be damaged by agents that affect blood cell production or the oxygen-carrying capacity of red blood cells.

   (c) Liver - liver injury induced by toxic materials depends on the toxic material and the duration of exposure.

   (d) Kidney - receives 20 - 25% of blood flow, thus, large amounts of circulating toxic materials reach the kidney. Salt and toxic materials concentrate in the kidney.

   (e) Reproduction System - Experimental results indicate that certain toxic materials interfere with the reproductive capabilities of both sexes, causing sterility, infertility, abnormal sperm, low sperm count, and/or affect hormone activity. Further study is required to identify reproductive

toxins and their effects.

C. External Toxins.

External toxins occur at the site of first contact between the human body and the toxic material, this action is referred to as, local effects. Toxic materials may react with the external barriers of the body or may penetrate the barrier and induce a systemic toxin.

1. Skin - The skin is, in terms of weight, the largest single organ of the body. It provides a barrier between the environment and other organs except the lungs and eyes and, therefore, is a defense against many chemicals.

   (a) The skin consists of the epidermis and the dermis. In the epidermis are sweat glands and ducts, glands, connective tissue, fat, and blood vessels. Toxic material can penetrate the epidermis, which constitutes the major surface area. Below the epidermis lies the dermis, a varied collection of cells.

   (b) The ability of the skin to absorb toxic materials depends on the health of the skin, type of the toxic material and the exposure environment.

   (c) Absorption by the skin is enhanced by:

   * Breaking the top layer of skin by abrasions or cuts.

* Increasing hydration of the skin.

* Increasing the temperature of the skin.

(d) Toxic materials can cause a reaction with the skin resulting in inflammation of the skin called dermatitis.

* Primary Irritants act directly on normal skin at the site of contact if the toxic material is in sufficient quantity for a sufficient length of time.

(e) Dermatitis may result in acne-like lesions on the skin, pigmentation change, new skin growth or loss of skin tissue.

2. Eyes - The eyes are affected by some of the same toxic materials that affect skin, but the eyes are more sensitive.

(a) Acid damage to the eye depends on the characteristics of the acid. Acid burns that are apparent during the first few hours are a good indicator of long-term damage to be expected.

* Sulfuric acid burns the eye and in addition, it simultaneously removes water from the skin and generates heat.

(b) Alkaline damage appears mild initially but can later lead to ulceration, perforation, and clouding of the cornea or lens.

(c) In addition, some toxic materials act on eye tissue to form cataracts, damage the optic nerve, or damage the retina. These toxic materials usually reach the eye through the blood system. Therefore, the route of exposure would be inhalation, ingestion or absorption rather than direct contact.

D. Additional Toxins.

Toxic materials may induce cancer, and other damage to the body. Some toxic materials are known to cause these effects while other toxic materials are suspected. It is important to note that these toxic materials must be handled carefully with respect to their potential toxic impacts and yet keep in mind the type of toxic material, route of entry and exposure duration.

1. Carcinogens - Cancer can be thought of as uncontrolled cell growth caused by the interaction of one or more chemical and/or physical agents (carcinogens) and organs or tissues of the human body. The uncontrolled cell growth results in organ or tissue disfunction.

(a) Although cancer ranks as the second most common cause of death in the United States, the process of carcinogenesis is not yet clearly defined. As a result, there are several problems encountered when evaluating the carcinogenic potential of toxic material in the environment. First, human health can be affected by a wide range of factors

including the environment, occupation, genetic predisposition and lifestyle (i.e. cigarette smoking, diet). Therefore, it is often difficult to determine the relationship between any one exposure and the onset of cancer. Second, many cancers are latent responses that is, the disease may not be manifested until many years after the initial exposure. Third, the mechanisms for carcinogenesis may differ according to the type and the site of cancer.

2. Embryonic Toxins - Embryonic toxins are similar to teratogens but cause lethal physiological harm, i.e. malformation, stillbirth or in-utero death of the embryo.

   (a) Most major structural abnormalities occur during the embryonic period, (5-7 weeks), while minor defects occur during the fetal period, 8-36 weeks.

*REFERENCE NOTES FOR MODULE III, LESSON NO. 2

CHEMICAL HAZARDS

I. INTRODUCTION.

Many chemicals will present more than one type of hazard; toxicity, fire, explosion, etc. Chemicals may be nontoxic under normal conditions; however, when heated they form highly toxic by-products. In addition, some toxic chemicals may be colorless and odorless, may dull the sense of smell, or may have no warning properties. Most illicit drug labs contain a variety of chemical substances in gaseous, liquid or solid form. Preventing exposure to toxic chemicals is a primary concern at an illicit drug lab. Therefore, it is necessary to obtain enough information about chemicals, so that one can evaluate the potential hazards and plan for appropriate control measures.

DO NOT assume that chemicals will react in the same manner based on similar chemical names. The difference in a single letter between two chemical names will identify two entirely different chemicals with completely different characteristics.

II. PHYSICAL COMPOSITION OF CHEMICALS.

Chemical compounds have specific properties which determine the type and degree of hazard they represent. Evaluating their potential hazard depends on understanding their composition and their relationship to the environment.

A. Solubility.

1. The ability of a solid, liquid, gas or vapor to blend

uniformly with another.

2. The degree of solubility varies from 0 to 100% depending on the chemical nature of the substance.

3. The hazards associated with many soluble chemicals, is enhanced verses the chemical in the solid form. Some chemicals in the presence of moisture will act as a corrosive. Upon contact with skin, the corrosive will burn and destroy layers of tissue.

B. Density/Specific Gravity.

1. Density of a substance is the weight per unit of volume. Density is used as a basis of comparison for solids, liquids and gases.

2. Specific gravity is the ratio of the density of a substance to the density of water.

If the specific gravity of a substance is greater than 1 (the specific gravity of water), it will sink in water. The substance will float on water if its specific gravity is less than 1.

3. Solvents tend to have specific gravities of 0.8 and 0.9; a solvent will float on top of water.

4. A hazard associated with density/specific gravity can be demonstrated in a sample collection of a chemical mixture. When a sample is drawn off the top of a chemical mixture, with significant different specific gravities evident through the mixture, the sample may not be indicative of the actual contents. Industry utilizes thief tubes to obtain a true representative

sample of the chemical mixture.

C. Boiling Point.

1. The boiling point is the temperature at which a liquid changes to a vapor.

2. With high-boiling point liquids, the most common entry of a toxic substance into the body is by body contact. With low-boiling point liquids, the inhalation route is the most common and serious.

3. Some chemicals can detonate when heated and explosion hazards are elevated.

4. If possible, avoid placing drums or containers that store chemicals of low boiling points in direct sunlight or heated environments. Drums that contain chemicals of low boiling points will bulge in sunlight and/or heat.

(a) Good Rule of Thumb:

CHEMICALS WITH LOW BOILING POINTS ARE USUALLY EXTREMELY FLAMMABLE OR TOXIC.

D. Melting Points.

1. The temperature at which a solid changes into a liquid is the melting point.

2. If a substance has been transported at a temperature that maintains it as a solid, a change in temperature may cause the solid to melt.

3. A chemical with a low melting point may generate more vapors than the chemical in the liquid or solid state.

E. Vapor Density.

1. If the density of a vapor or gas is greater than that of the surrounding air, then it will tend to settle to the lowest point. If vapor density is close to air density or lower, the vapor will tend to dispense in the atmosphere.

2. Most flammable liquids have a vapor density greater than that of the surrounding air and will tend to settle on the floor or lowest point.

3. In settling, dense vapor creates two hazards. First, if the vapor displaces enough air to reduce the atmospheric concentration of oxygen below 16%, suffocation may result. Second, if the vapor is toxic, then inhalation problems exist. Also, if a substance is explosive and very dense, the explosive hazard may be close to the ground rather than at the breathing zone.

F. Vapor Pressure

1. As temperature increases, so does the vapor pressure. Thus, more liquid evaporates or vaporizes.

2. The lower the boiling point of the liquid, the greater the vapor pressure at a given temperature.

3. As the vapor pressure of a toxic chemical begins to exceed certain limits, a serious health hazard

factor is identified by creating a vapor or gas which is an irritant to tissue and a fire hazard. A spilled hazardous material with a high vapor pressure will rapidly be displaced into the air.

G. Flashpoint.

1. The minimum temperature at which a substance, by an open flame or spark, produces sufficient flammable vapors to ignite is its flashpoint. If the vapor does ignite, combustion can continue as long as the temperature remains at or above the flashpoint.

2. A chemical with a low flashpoint presents a serious fire hazard since only a small amount of the chemical is needed at a low temperature to generate and sustain a fire. Extreme caution should be taken to prevent spillage of a chemical with a low flashpoint.

H. Explosive Limit.

1. The range of concentration (as measured by a % of volume in the air) in which an explosion can occur upon ignition in a confined area.

2. Chemicals with low explosion limit factors must be treated with great respect and prevented from contact with an ignition source.

III. HAZARD CLASSIFICATION SYSTEMS.

There are many classification systems which may be used to assess a chemical hazard. Three arbitrary classification systems have been established with respect to (1) hazardous

material, (2) hazardous waste and (3) transportation requirements. Numerous differences exist within these classification systems. Therefore, the classification system selected should be with an understanding that the chemical is being identified as (1) a hazardous material, (2) hazardous waste or (3) transportation requirements.

A. Code of Federal Regulations, Title 49, Transportation.

1. The United States Department of Transportation defines "Hazardous Material:"

> " 'Hazardous Material' as a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated."

2. The Federal Department of Transportation regulates over 1,400 hazardous materials. The regulations require labels on small containers and placards on tanks and trailers. The labels and placards identify the hazardous material contained in the cargo.

3. The United States Department of Transportation defines a waste as a hazardous waste if one or more of the following hazards codes apply:

* Ignitable Waste.

* Corrosive Waste.

* Reactive Waste.

* EP Toxic Waste.

* Acute Hazardous Waste.

* Toxic Waste.

B. Code of Federal Regulations, Title 40, Protection of Environment.

1. The Environmental Protection Agency defines "Hazard Substance:"

(a) "any substance designated pursuant to Section 311(b) (2)A of the Clean Water Act (CWA);"

(b) "any element, compound, mixture, solution or substance designated pursuant to section 102 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA);"

(c) "any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act (but not including any waste the regulation of which under the solid Waste Disposal Act has been suspended by Act of Congress);"

(d) "any toxic pollutant listed under section 307(a) of the CWA;"

(e) "any hazardous air pollutant listed under

section 112 of the Clean Air Act;"

(f) "any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to Section 7 of the Toxic Substances Control Act. The terms do not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed on designated as a hazardous substance under subparagraphs (a) through (f) of this paragraph, and the term does not include natural gas, natural gas liquids, liquified natural gas or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

2. The Environmental Protection Agency defines "Hazard Waste:"

A "hazardous waste" is a waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may either;

(a) Cause or significantly contribute to an increase in mortality or increase in serious irreversible, or incapacitating reversible illness.

(b) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed.

C. General Hazard Properties.

1. Explosive - Any chemical compound, mixture, or device, the primary purpose of which is to function by explosion with a substantially instantaneous release of gas and heat.

2. Flammable.

   (a) A substance that is capable of being easily ignited and will burn rapidly.

   (b) Materials which generate or produce combustible vapor at normal or surrounding temperatures.

3. Combustible - Any material which can readily ignite and sustain a fire.

4. Corrosive - Any liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact.

5. Oxidizers - A substance that gives up oxygen readily to stimulate the combustion of organic matter.

6. Compressed Gas - Any material or mixture having in its' container an absolute or vapor pressure exceeding certain limits.

   (a) A compressed gas is considered flammable when a mixture of 13% or less with air forms a flammable mixture, or the flammable range with air is wider than 12% regardless of the

lower limit.

(b) A number of properties make compressed gases hazardous.

* Pressure and the potential energy in the compressed gas may be released suddenly due to container rupture. This pressure or energy when released, can cause extensive health and property damage.

* Some compressed gases exhibit the potential to form a flammable mixture.

* Compressed gases may have corrosive properties.

* Compressed gases may also act as asphyxiants and oxidizers.

7. Poisonous Material.

Poison A - Extremely Dangerous Poisons.

Poisonous gases or liquids of such nature that a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life.

Poison B - Less Dangerous Poisons.

Substances, liquids or solids, other than Class A, which are known to be so toxic to man as to afford a hazard to health; or which, in the absence of adequate data on human toxicity, are presumed to be toxic to man.

8. Irritant Materials - A liquid or solid which upon contact with fire or when exposed to air gives off dangerous or intensely irritating fumes.

IV. CHEMICAL HAZARDS.

This segment includes fire hazards, explosion hazards, corrosive hazards and chemical reactivity. Also given are the types of each hazard and control measures to reduce the potential hazards.

A. Fire Hazards.

When a substance that will burn is heated to a certain temperature, it will ignite and continue to burn as long as there is fuel, the proper temperature, and a supply of oxygen. A fire can be defined as a self-sustaining, flaming combustion.

1. Combustibility - is the ability of a material to act as a fuel. Materials that can be readily ignited and sustain a fire are considered combustible.

(a) Three elements are required for combustion to occur:

* Fuel.

* Oxygen.

* Heat.

Most fires can be extinguished by removing one of these components. For example, water

applied to a fire removes the heat, thereby extinguishing the fire.

(b) When a material by itself generates enough heat to self-ignite and combust, spontaneous combustion occurs, either as a fire or explosion.

(c) Combustibles do not ignite as easily as flammables, yet they can be ignited under certain circumstances and must be handled with caution.

(d) While working on-site where a fire hazard may be present, the concentration of combustible gases in the air must be monitored, and any potential ignition source must be kept out of the area.
Example: Heaters, smokers, electrical appliances and equipment.

(e) Eliminate potential ignition sources from surrounding combustible chemicals.

2. Flammability - is the ability of a solid, liquid or gas to generate a sufficient concentration of combustible vapors under normal conditions to be easily ignited and burn rapidly.

(a) It is necessary to have proper fuel-to-air ratio to allow combustion.

(b) A flammable material is considered highly combustible if it can burn at surrounding temperatures.

(c) A spark generated by static electricity can have sufficient energy to ignite flammable or explosive gases, vapors or dusts. Static electricity is generated by the contact and separation of dissimilar material. It can occur under many circumstances during the mixing and agitation of materials, while a liquid flows through a pipe or during splash filling of a container.

(d) Flammable liquids vaporize and form flammable mixtures when in open containers, when leaks or spills occur, or when heated.

(e) In the handling and use of flammable liquids, exposure of large liquid surfaces to air should be prevented. Therefore, handle and store these liquids in closed containers.

* In areas where flammable liquids are stored, handled, used, dispensed, or transferred, smoking and the carrying of lighters, matches and other spark-producing devices should be prohibited.

* Fire risks can also be reduced by using approved equipment.

* Fire arms should not be discharged near flammable chemicals.

3. Gas or Vapor Explosion - is a very rapid, violent release of energy.

(a) The major factor contributing to the explosion is the confinement of a flammable material.

(b) When vapors or gases cannot freely dissipate, they enter the combustion reaction more rapidly.

(c) Poorly ventilated buildings, sewers, drums and bulk liquid containers are examples of places where potentially explosive atmospheres may exist.

(d) While working at a site where an explosion hazard may be present, the air must be monitored.

4. Thermal Heat Hazard - generally comes from fires and explosives.

(a) Prevention of fire or explosion involves recognizing the hazard and taking appropriate steps. This includes using equipment to detect an explosive flammable atmosphere and using equipment, such as explosion proof instruments and non-sparking tools, which will not ignite flammable gases or vapors.

(b) The two primary methods of preventing thermal injury from fire or explosions are to (1) prevent their occurrence, or if they should happen, (2) to be at a safe distance away from the fire or

explosion.

(c) People in an area with flammable concentrations of a material should leave until the concentration in the area is reduced to a safe level.

(d) In areas where flammable vapors may accumulate, avoid providing a potential source of ignition. These sources include, but are not limited to, smoking, sparks and static electricity.

B. Explosion Hazards.

An explosion is when a substance undergoes a very rapid chemical change producing large amounts of gases and heat. The gases produced, rapidly expand due to the heat at velocities exceeding the speed of sound. This creates both a shock wave and noise.

1. Types of Explosions.

(a) <u>High or Detonating Explosion</u> - Chemical change occurs very rapidly. The rapidly expanding gas produces a shock wave which may be followed by combustion.

(b) <u>Low or Deflagrating (Burning) Explosion</u> - The rate of burning is up to 1000 feet per second giving off intense heat and sparks. Generally, in this situation there is combustion followed by a shock wave.

2. High or low does not indicate the explosion hazard

but only the rate of chemical change of the substance or material.

3. Explosions can occur as a result of reactions between many chemicals not ordinarily considered as explosives.

4. Gases, vapors and some substances when confined, can also explode if an ignition source is present.

5. Ignition of an explosive mixture may be prevented by the control of open flames, friction sparks, static electricity, welding, smoking and excessive heat. Qualified personnel are necessary to field monitor for explosive atmospheres and flammable vapors. Utilize extreme caution when handling an explosive material.

6. Keep photo-reactive chemicals that are receptors for ultraviolet light stimuli away from direct sunlight.

C. Corrosive Hazard.

A process of material degradation. Upon contact, a corrosive material may destroy body tissues, metals, plastics, and other materials.

1. Skin irritation and burns are typical results when the body contacts an acidic or basic material. Burns caused by chemicals are similar to those caused by heat in which both types of burns destroy body tissue.

(a) Some chemicals cause not only chemical burns

because of their caustic action, but also thermal burns because of the heat that can be generated when they react with moisture in the skin.

(b) Additionally, some chemicals will continue to cause damage until reaction with body tissue is complete or until the chemical is washed away by prolonged flushing with water.

2. The severity of chemical burns depends upon the following factors:

(a) corrosiveness of the chemical.

(b) Concentration of the chemical.

(c) Temperature of the chemical or its solution.

(d) Duration of the contact.

* The first three factors are set by the very nature of the chemical and the requirements of the process in which it is being used. The fourth factor, however, duration of the contact, **CAN BE CONTROLLED BY THE PROPER FIRST-AID TREATMENT ADMINISTERED WITHOUT DELAY.**

- i.e. Wash the contact area for a full fifteen minutes.

D. Chemical Reactivity Hazard.

All chemical reactions involve a change of energy and

the majority of reactions release the energy in the form of heat.

1. Reactive Materials - A reactive material is one that can undergo a chemical reaction when influenced from an outside source, such as heat, air or water, resulting in chemical changes.

   (a) The term "reactive hazard" is used to refer to a substance that undergoes a violent or abnormal reaction in the presence of water or under normal atmospheric conditions.

   (b) Caution must be taken to store reactive materials away from combustible materials to eliminate a potentially dangerous fire risk.

   (c) Chemicals reactive to air should be sealed in a container with an inert gas, in a bottle containing an oil solution, or under water away from heat. Water reactive chemicals must be maintained in a dry state.

   * Good Rule of Thumb:

     Chemicals ending in "Hydride"ARE USUALLY WATER REACTIVE.

2. Chemical Reaction - is the interaction of two or more substances, resulting in chemical changes. Reactions with common materials other than water, may release energy violently.

   (a) Chemical reactions, that give off heat are considered to be the most dangerous.

(b) Hazardous reactions usually result from the unintended mixing of incompatible materials or from fire. A hazardous reaction due to this incompatibility can be extremely violent; the new products formed, as a result of a reaction, may exhibit extremely different hazards.

(c) Mixing an acid with a solvent material will cause a chemical reaction resulting in an explosion.

3. Compatibility - Occurs when two or more hazardous materials remain in close and permanent contact without reaction. Incompatibility, however, does not necessarily indicate a hazard.

(a) The basic chemical groups into which chemicals at an illicit drug lab should be separated are as follows:

* Acids (pH <7).

* Caustics (pH >7).

* General organics (carbon containing compounds).

* Heavy metals and oxidizers (excluding organic peroxides).

* Reactives (pyrophoric, water reactive, shock sensitive, or pH sensitive).

* Flammables.

* Cylinder gases.

  - These chemical groups do not have absolute boundaries. There are thousands of chemicals that may not fit into one of these groups or may fit into one or more groups.

(b) Hazards due to chemical reactions. (INCOMPATIBILITY).

* Generation of heat.

* Fire.

* Explosion.

* Toxic gas or vapor production.

* Formation of substances with greater toxicity.

* Formation of shock-or friction-sensitive compounds.

* Dispersal of toxic dusts and mists

* Violent chemical reaction.

  - The identity of unknown chemicals must be determined by chemical analysis to establish compatibility. On the basis of their chemical properties, a chemist

should be able to anticipate a chemical reaction resulting from their mixing.

- Avoid storage that may allow mixture of incompatible chemicals by exercising control over the physical arrangement of the chemicals to minimize the consequences of accidental mixing.

- Through the knowledge of chemicals seized at an illicit drug lab, incompatible chemicals should be separated according to the basic chemical group. Following the separation of the chemicals, the containers should be physically segregated by an appropriate space and designated area. Traffic patterns, if necessary, should be identified and appropriately marked.

4. Oxidizers - An oxidizing agent or substance when combined with oxygen may cause a fire when in contact with a combustible material, react violently with water, or when involved in a fire, react violently.

   (a) Oxidizers unite with hydrogen on the skin and cause dermatitis.

   (b) Store oxidizers separate from incompatible acids.

E. Behavior of Chemicals in the Environment.

Whether a chemical is accidentally spilled or is slowly leaking from an old rusty drum, it is important to determine how it might disperse and its ultimate fate in the environment. In some cases, it may not be able to escape the setting into which it was released. Hence, it may not present a problem. In general, the pathways for dispersion are air, surface water, ground water, and to a lesser extent soil. If the specific pathways of various materials can be identified from their chemical/physical characteristics, potential threats to human health and the environment can be anticipated and appropriate response actions taken. The interaction of the natural setting of an incident and the specific compounds involved will ultimately determine dispersion and dictate the response actions needed.

1. Characterization of Chemicals Involved - The more important dispersion pathways can generally be determined, at least tentatively, if the identity of the chemical(s) is known. Then its physical/chemical properties, will determine how a chemical behaves when released into a specific environment. In addition, the amount of material released and the rate of release are important factors for determining potential pathways.

2. Physical Setting - The physical setting of the site controls what pathways a chemical may follow. the physical barriers of the immediate area will affect how fast a chemical material disperses and the direction it may take.

3. Climate - The local atmospheric conditions influence dispersion of a contaminant in the

environment. Temperature has a direct effect on a chemicals physical/chemical behavior. Surface runoff and soil absorption resulting from rain also affects dispersion, as do wind direction, wind speed, and atmospheric conditions.

4. Basic Air Pathways - In order for a material to become airborne, it must be either gaseous or in the form of minute separate particles.

   (a) A volatile liquid will vaporize more rapidly as the surrounding temperature approaches the liquids boiling point. If the vapors' density is greater than that of air, it will tend to settle to the lowest point. A substance with a vapor density less than air will tend to rise and disperse readily.

   (b) When a substance becomes airborne, it may behave in many different ways. It may react with other contaminants in the air forming a new substance, it may react or dissolve in water, which falls to earth or it may be unstable and short lived.

*REFERENCE NOTES FOR MODULE III, LESSON 3.

I. INTRODUCTION

Clandestine drug lab enforcement personnel face a higher risk of accidents and injury than the normal employee. Often they must deal with situations that are beyond their control. The personnel protective equipment worn to reduce chemical exposures can increase the accident potential by:

* Reducing dexterity
* Narrowing field of vision and clarity
* Diminishing communication and hearing capabilities
* Increasing heat stress
* Generating physical and mental stresses that can reduce reaction times

In short, response personnel are subject to many outside forces that can increase their chances of an accident or injury.

This segment will deal mainly with physical hazards such as falls, electrical shocks, noise, temperature, radiation and stress. It will include looking at how to recognize the physical hazards present during a response operation and the actions to take to help prevent accidents.

II. ACCIDENTS

A. Causes.

An accident is an unforseen happening resulting in damage to property or bodily harm and injury. An accident may be the result of an unsafe act--such as not wearing a respirator--or an unsafe condition--such as a toxic atmosphere. These situations can be related since an individual's unsafe act can result in an unsafe condition for someone else.

B. Prevention.

There are two main approaches to reducing or helping to prevent accidents:

1. Eliminate when possible unsafe conditions that can contribute to an accident, such as neutralizing live electrical circuits or providing personnel with proper protective equipment.

2. Reduce unsafe acts. All personnel must make a conscious effort to work safely despite the adverse conditions of the work environment. Safety awareness must be emphasized so that the safety factors involved become an integral part of a response operation.

C. Safety.

Safety is being shielded from receiving or causing injury, or damage. Safety requires a two-fold approach protection for actions one can control and awareness of situations others may create.

The following is a convenient system for characterizing hazards to the human body. These sources are

classified by the type of energy transferred:

* Kinetic/Mechanical: ("striking" or "struck by"). Examples: slips, falls, being struck by an object.

* Thermal: Examples: Fires, explosions, hot environments.

* Electrical: Examples: Faulty wiring, defective equipment.

* Chemical: Examples: Local effects from corrosives, and internal or systematic effects from toxic chemicals.

* Acoustic: Examples: Explosions, loud noise.

* Biological: Examples: Poisonous plants and animals, disease producing organisms.

* Radioactive: Examples: Ionizing radiation.

Other hazards that may not fit exactly into these categories are in a special topics category.

D. Common Injuries.

When referred to as "slip-trip-fall" type injuries. This category includes "struck-by" injuries along with the "striking" injuries.

1. "Striking" Injuries - Agents must walk cautiously at a site to avoid tripping. Problems at a scene can be compounded by uneven terrain and mud, caused by rain or chemical waste.

   Walking on drums is dangerous. They can tip over, or be so corroded that they will collapse. Falls from heights are more serious and extra precautions such as safety belts and lifeline must be taken if guard rails or railings are absent.

2. "Struck-by" Injuries - Along with the "slip-trip-fall" dangers, there is the possibility of being "struck by" something. Personnel working above others drop a piece of equipment or dislodge debris. Buildings may be in danger of collapsing or stacks of drums fall at the slightest touch.

3. Electrical Injuries - At some locations, drums or containers may be buried and will have to be uncovered before they can be sampled or handled. Prior to excavation, personnel must determine if there are any underground utilities in the area. If there are, they must be located and protected by appropriate authorities.

E. Accident Prevention.

   Law enforcement personnel must continually be made cognizant of all the potential hazards at a clandestine drug lab through a continuous awareness program.

III. MATERIAL HANDLING

Accidents in the manual handling of materials are primarily the result of unsafe working habits--improper lifting, carrying too heavy a load, incorrect gripping, or failing to wear personal protective equipment. Always test an object before attempting to lift and carry it. If it is too heavy, get help.

A. Equipment.

Agents should wear protective equipment like gloves and safety shoes. Avoid being pinched between the load and floors and walls. Besides manual devices, there are powered units like forklifts and tractors for moving materials.

B. Excavations.

1. The walls and faces of excavations and trenches where personnel may be exposed to moving ground, must be guarded by a shoring system, sloping of the ground, or some other equivalent means.

2. A competent contractor must be notified to ensure adequate sloping, shoring and bracing of the excavation and to check for evidence of possible slides or cave-ins.

C. Compressed Gas.

Compressed gas cylinders can present a physical hazard to personnel. The cylinder can be over pressured and explode if heated or can become a missile if its valve is broken off releasing the compressed gas.

D. Fires and Explosions.

1. The two primary methods of preventing thermal injury from fire or explosions are to prevent their occurrence, or to be at a safe distance if they should occur. People in an area with flammable concentrations of a material should leave until the concentration is reduced to a safe level.

2. Prevention of a fire or explosion, the preferred method, involves recognizing the hazard and taking appropriate steps to eliminate it. This includes using devices to detect an explosive or flammable atmosphere and using equipment such as explosion-proof instruments and non-sparking tools that will not ignite flammable gases or vapors. For additional discussion, refer to the section titled "Chemical Hazards".

IV. HEAT/COLD STRESS

The adverse stress to the body due to exposure to excess heat or cold can greatly diminish the ability of the body to function properly. Knowing how to recognize such stress and how to prevent it will greatly enhance the response personnels' ability to function under these extreme conditions.

A. Heat Stress.

The human body is designed to function at a certain internal temperature. When metabolism or external sources (fire, hot summer day) cause the body temperature to rise, the body seeks to protect itself by triggering cooling mechanisms. Excess heat is

dissipated by two means:

* Changes in blood flow to dissipate heat, which can be seen as "flushing" or reddening of the skin in extreme cases.

* Perspiration, the release of water through skin and sweat glands. While working in hot environments, evaporation of perspiration is the primary cooling mechanism.

* Protective clothing worn to guard against chemical contact effectively stops the evaporation of perspiration. THUS THE USE OF PROTECTIVE CLOTHING INCREASES HEAT STRESS PROBLEMS.

1. Heat Stress Disorders - the major disorders due to heat stress are heat cramps, heat exhaustion, and heat stroke.

   (a) Heat cramps are painful spasms which occur in the skeletal muscles of workers who sweat profusely in the heat and drink large quantities of water, but fail to replace the body's lost salts or electrolytes.

   (b) Heat exhaustion is characterized by extreme weakness or fatigue, dizziness, nausea, and headache. In serious cases, a person may vomit or lose consciousness.

   (c) Heat stroke is a very serious condition

caused by the breakdown of the body's heat regulating mechanism. The skin is very dry and hot with a red, mottled or bluish appearance. Unconsciousness, mental confusion, or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage. Get medical assistance quickly!

2. Heat Stress Prevention - Steps that can be taken to reduce heat stress are:

(a) Acclimatize the body. Allow a period of adjustment to make more intense heat exposure endurable.

(b) Drink more liquids to replace body water lost during sweating.

(c) Rest frequently.

(d) Increase salt consumption by eating a balanced diet, eating foods naturally higher in salts and drinking commercial beverages prepared to replace salts and electrolytes. Sweat is mostly water with smaller amounts of sodium and potassium salts. Replacement fluids should be similar in composition. DO NOT USE SALT TABLETS. Salt tablets can cause shock by adding too much salt to the body too quickly.

(e) Wear cotton underclothing under chemical

protective clothing. The cotton will absorb perspiration and will hold it close to the skin. This will provide the body with the maximum cooling available from the limited evaporation that takes place beneath chemical resistant clothing. It also allows for rapid cooling of the body when the protective clothing is removed.

B. Cold Stress.

Significant heat loss resulting in hypothermia or frostbite typically occurs in cold, wet and windy environments. You are more susceptible when you are physically exhausted or in poor physical condition.

1. Frostbite - Frostbite is the most common injury resulting from exposure to cold. The extremities of the body are most often affected.

2. Hypothermia - Hypothermia is characterized by shivering, numbness, drowsiness, muscular weakness and a low internal body temperature when the body feels warm externally. This can lead to unconsciousness and death. In all cases seek medical assistance.

3. Prevention.

   (a) Dress for warmth, wind and wet. Many layers of clothing are better than a single heavy coat. Wear a head covering!

   (b) Maintain a good diet. Your body will use

large amounts of energy staying warm.

(c) Stay active. When you are physically active, your body generates heat. When you are inactive, (standing or sitting) your body produces less heat.

(d) Report a problem. If you feel cold, can't stop shivering or are very tired, stop what you are doing and report the problem to your supervisor. A buddy system is a good way to watch yourself and your partner and identify a problem before it becomes serious.

V. ELECTRICAL HAZARDS

Electrical hazards can exist at drug labs because of exposed wiring or improper use of electrical equipment. the presence of underground electric lines must be checked before any digging or excavating. Although electrical shock may not cause death, it can cause burns or falls that lead to injury.

A. Protection.

Ways of protecting personnel from shock are:

1. The proper grounding of equipment. The ground wire re-directs the current to ground in the event of a short circuit.

2. Using double-insulated tools that do not need to be grounded because they are:

   (a) Encased by a nonconductive material which is

shatterproof, or

(b) Have a layer of insulating material isolating the electrical components from a metal housing (used for more rugged design). Double-insulated tools are identified by the notations on the tool or by the symbol of a square within a square.

3. Tools and equipment with cords should be inspected for damage that could lead to shock.

VI. NOISE

Excessive noise can destroy the ability to hear and may also put stress on other parts of the body, including the heart. The damage depends mainly on the intensity and length of exposure. After a period of time off, hearing may be restored. Under some circumstances the damage may become permanent. Permanent damage can be caused by long-term exposure to loud noise, or in some cases, by brief exposure to very loud noises. Prevention is the only way to avoid health damage. Ear noise suppressors should be worn when working near sources of noise such as generators.

VII. CONFINED SPACES

A confined space is described as having limited openings for entry and exit; has unfavorable natural ventilation which could contain or produce dangerous air contaminants, and is not intended for continuous occupancy. Some examples of confined spaces are storage tanks, compartments of ships, pits, silos, ventilation and exhaust ducts, sewers, tunnels and underground utility vaults.

A. Locations.

A closed building or room is an example of confined spaces that law enforcement personnel could encounter. Procedures for entry into a confined space are vital to prevent fatalities. Because of poor ventilation, high concentrations of gases or vapors are more likely to exist in a confined space than at an open site. Also, a large amount of organic material in an enclosed space can combine with oxygen in the surrounding air to product an oxygen deficient atmosphere.

B. Entry.

Besides the problem with possible high concentration of gases or vapors, confined spaces also present an entrance and exit problem. Most of the spaces mentioned earlier have only small openings for entry and exit. This can interfere with use of equipment like self-contained breathing apparatus (SCBA). Because of this problem, and in case an officer is injured, a lifeline is often attached to aid in pulling him out. That way rescuers would not have to enter this space. A lifeline is especially important in spaces where access is through an opening in the top of the space.

C. Requirements.

The basic requirements for entry into a confined space are to:

1. Test the atmosphere prior to entry for oxygen and toxic and combustible levels of gases or vapors.

If the oxygen content is less than 19.5 percent, personnel will have to wear supplied air respirators while in the area. If toxic levels of chemicals are present, appropriate respiratory protection will be necessary. If combustible gas levels exceed the safety standards for the lower explosion limit (LEL), entry should be delayed until the level falls to within the safety standard. Forced ventilation can be used to lower the concentration of toxic or combustible gases and raise the oxygen content.

2. Establish a system to mark a confined space unsafe should tests indicate it is unsafe to enter. The markings are to remain in place until tests indicate entry is safe.

VIII. IONIZING RADIATION

The possibility exists, however remote, that law enforcement personnel may encounter sources of ionizing radiation at an illicit drug lab. Any object marked with a radiation warning lab should not be handled. Move away until the object in question has been evaluated by competent personnel.

A. Exposure.

Overexposure of personnel to either an external or internal source of radiation creates a medical emergency. In serious situations involving a radioactive material, the degree of contamination must be determined before the individual can be admitted to a hospital.

B. Effects.

Among the long term effects are an increased incidence of cancers, genetic defeats and embryological effects to pregnant women.

IX. LONG SHIFTS

Law enforcement personnel are often required to work shifts longer than eight hours. This is in an inherent problem with law enforcement. The danger with working long shifts is that attention to possible hazards begins to rapidly decrease. This can be counteracted with increased breaks and rest. Food and caffeinated beverages can go a long way to help maintain an individual's concentration.

*REFERENCE NOTES FOR MODULE III LESSON NO. 4

I. INTRODUCTION

A. Purpose.

Airborne contamination at Clandestine Laboratory sites can present a risk to the health and safety of field personnel. Without knowledge of the type and concentration of airborne contaminants present, the associated hazards and risks remain unknown. Air monitoring can provide critical information necessary for:

* Selecting personal protective clothing and equipment.

* Specifying safe work practices.

* Assessing the potential health effects of exposure

* Determining actions to limit the hazards

B. Methods.

Air monitoring data can be obtained using two different methods.

1. Field Monitoring - This method involves sampling the air and obtaining instantaneous results using portable field instruments. These instruments are referred to as "direct reading".

2. Air Sampling - This method involves collecting air

samples for laboratory analysis. Laboratory analysis delays results from hours to weeks.

C. Requirements.

To obtain and interpret useful information, care must be taken to:

1. Select the appropriate instrument for the known or suspected hazard(s) to be evaluated.

2. Consider the limitations of the instrument selected.

3. Consider the uncertainty and error associated with the results obtained when making conclusions or interpretations.

II. PRINCIPLES OF DATA COLLECTION AND MEASUREMENT

A. Types of Data.

Field monitoring instruments do not all collect the same type of data. Knowledge of the type of data obtained is critical to applying limitations to any interpretations or conclusions.

1. Qualitative Data - Qualitative monitoring is designed to determine if a chemical hazard (contaminant) is present.

2. Quantitative Data - This data specifies the quantity or concentration of an identified contaminant.

3. Mixed - Most data provided by field monitoring instruments is both quantitative and qualitative in that both the identity and magnitude of the hazard (contaminant) are obtained. However, most field monitoring instruments have significant limitations affecting the results obtained.

B. Characteristics.

1. Accuracy - Accuracy describes how close the measured results are to actual conditions. For field monitoring instruments, accuracy is primarily dependant on the sensing device and the condition of the unit.

2. Precision - Precision describes how close (degree of agreement) repeated measurements are of the same condition. Data can be precise but inaccurate.

3. Representative - Representative data describes samples that describe conditions (environment) adjacent to where the sample was taken. The result of field monitoring must be representative of the entire condition being evaluated to be useful.

4. Error - Error describes conditions which can affect the accuracy and/or precision of data. Some sources of error are inherent in the instrument while others are dependent on its use and condition.

III. CHARACTERISTICS OF AIR MONITORING INSTRUMENTS

There are a variety of factors which should be evaluated to

determine the usefulness of a particular instrument in the field.

A. Portability.

A portable instrument should be:

1. Able to withstand shock from transportation, moving and handling.

2. Designed to withstand damage from environmental conditions including temperature, humidity, heat, weather and dust.

3. Light weight, self powered (no AC) requirement and easy to carry, set up and operate.

B. Useful Results.

1. Response Time - The interval between sensing and indicating. The shorter the response time, the faster data can be obtained.

2. Direct Reading - The instrument response should be readable with little or no manipulation and interpretation.

C. Selectivity.

A field instrument should be able to discern among contaminants and indicate only for the hazard of interest. Selectivity establishes which contaminants will illicit a response on the instrument.

D. Sensitivity.

Sensitivity defines the lowest concentration an instrument can accurately and repeatedly analyze.

E. Inherent Safety.

1. Definition - Instruments which are inherently safe can be used in hazardous environments such as flammable and explosive atmospheres.

   Almost all field monitoring instruments are electrical devices and therefore, can provide a source of ignition to a flammable explosive environment. Inherently, safe instruments are designed to prevent a potential ignition source from igniting a flammable or explosive atmosphere.

2. Standards - The National Fire Protection Association (NFPA) established definitions for hazardous atmospheres and minimum standards for equipment safety, as published in the National Electrical Code (NEC).

3. Certification - By agreement, several national groups have developed test protocols for certifying equipment as inherently safe (i.e. meeting minimum standards of acceptance). A certified device carries a permanently affixed plate with laboratory type and classes, divisions and groups tested against.

   (a) Certification Organizations.

   * Factory Mutual (FM)

* Underwriters Laboratories (UL)

* Other

  - Mine Safety and Health Administration (MSHA)

  - U.S. Coast Guard (USCG)

IV. FIELD INSTRUMENTS

A. Introduction.

In general, commonly used portable field instruments can be grouped into four categories based on the type of atmosphere or hazard of interest. Instruments are available to sample and analyze for:

1. Explosive atmospheres.

2. Oxygen Deficient Atmosphere.

3. Toxic Atmosphere.

4. Radioactive Hazards.

B. Types of Instruments.

1. Combustible Gas Indicators (CGI).

   (a) Theory and Use - CGI(s) measure the concentration of flammable vapor or gas in air.

   * Many chemical materials produce

combustible or flammable vapors or gases. When sufficient gas or vapor has mixed with air, a flammable atmosphere occurs.

(b) Advantages.

* Portable, rugged, simple to operate and fast response.

* Extension hoses and probes are available to allow for "remote" sampling.

* Can be continuously operated.

(c) Disadvantages/Limitations

* The reaction is temperature dependent due to differences between calibration and sampling temperatures.

* Most CGI(s) are calibrated to pentane or methane but not all combustible or flammable gases or vapors give the same response.

* A charcoal pre-filter is required to differentiate between petroleum vapors and combustible gases.

* Oxygen enriched and deficient atmospheres will give false readings.

* Certain chemical materials including leaded gasoline, will contaminate the filament and decrease its sensitivity.

(d) Field Application.

* Identify flammable or explosive environments.

* Identify flammable liquids.

* Identify potential hazards associated by confined spaces and poorly ventilated areas.

2. Oxygen Meters.

(a) Theory and Use - Oxygen meters measure the percentage of oxygen in air. Both oxygen deficient and enriched atmospheres can be hazardous to humans and affect the accuracy of testing equipment. In addition, changes in oxygen concentration can affect the flammability of materials.

(b) Advantages.

* Same as for CGI(s).

(c) Disadvantages/Limitations.

* The meter operation is dependent on the pressure of oxygen in the air. A meter calibrated at sea level and used at high

elevations will falsely indicate an oxygen deficient atmosphere.

* Oxygen sensors (cells) have a short shelf life (6 months).

3. Combination Instruments.

(a) Theory and Use - Many units combine a CGI and an Oxygen meter into one instrument. some newer models also incorporate a toxic gas sensor. Combination meters use the same technology for gas and vapor detection as do individual sensing instruments.

(b) Advantages.

* Single meters allow fast measurement of two interdependent hazards (oxygen deficiency and flammable atmosphere).

(c) Disadvantages/Limitations.

* Same as for individual instruments.

(d) Field Operation.

* Combination meters are considered the "work horse" for many field situations.

* Combines application for oxygen meters and CGI(s).

4. Direct Reading Colorimetric Indicator Tubes.

(a) Theory and Use - Colorimetric indicator tubes are used to measure the presence and concentration of a specific chemical hazard. Individual types of tubes are manufactured for testing individual chemical species or groups of materials.

* Color indicator tubes consist of a glass tube filled with one or more sections of indicator chemicals. A known volume of air is drawn through the tube allowing contact with the indicator chemicals. Chemical contaminants in the air react with the indicator chemicals resulting in a color change called a stain.

  The length of stain is proportional to the concentration of the contaminant.

(b) Advantages.

* Portable, light weight and simple to use following training.

* Allows qualitative field/measurement for a variety of chemical contaminants or groups of materials. Over one-hundred (100) types of tubes available.

* Relatively rapid response, convenient to use.

* Durable and rugged.

(c) Disadvantages/Limitations

* Colorimetric indicator tubes should be used with caution, often as an initial screening to determine if additional sampling is required. Indicator tubes are considered to have an accuracy ± 25-35% (i.e. difference between measured value and "true" value).

* Limited shelf life.

* Operator's ability to correctly "read" the length of stain.

* Colorimetric indicator tubes should be refrigerated during storage.

* The tube should be "read" in good lighting. Avoid fluorescent and mercury vapor lighting.

(d) Field Applications.

* Determination (present or not present) of contaminant.

* Quantitative determination (magnitude) of identified contaminant. (± 25-35%).

* Rapid screening for various suspected field chemical hazards.

* Limited confirmation test for materials preliminarily identified by other means.

5. Photoionization Detector (PID).

(a) The photoionization instrument identifies chemical contaminants by measuring the electric current removed from the chemical contaminant exposed to a UV (Ultraviolet) source.

(b) Advantages.

* Portable, rugged, easy to use instrument.

* Instant warm up time direct read and rapid results.

* Uses no flame or fuel source.

* Interchangeable probe.

* Can be calibrated to direct read for individual species.

(c) Disadvantages/Limitations.

* Significant differences in relative response for many materials.

* Differentiation of chemical species not practical for most field work.

* Sensitive to high humidity conditions.

* Subject to interference by nearby power sources.

* UV lamp sources are easily damaged or contaminated.

* Field use and interpretation of results requires training and experience.

(d) Field Applications.

* Useful for field surveys after identifying no flammable atmosphere hazard.

* Can detect materials not responsive to a CGI detection.

6. Flame Ionization Detector (FID).

(a) Theory and Use - The FID works similar to a photoionization instrument except a hydrogen flame provides the source of energy to ionize sampled contaminants.

(b) Advantages.

* Portable and rugged.

* Wide operating range.

* Gas Chromatography (GC) feature useful for many field situations.

* Fast response.

* Audible alarms available.

* Responds to most organics.

(c) Disadvantages/Limitations.

* Wide range of relative responses.

* Unit contains a flame and compressed hydrogen.

* Requires some warm-up time.

* Operation of GC mode normally requires additional equipment.

* Instrument use and interpretation of data requires training and experience.

(d) Field Application.

* Similar to a photoionization instrument.

V. INSTRUMENTATION PROGRAM

A. Selection.

Air monitoring instruments designated for direct-read field sampling application should be selected based on a variety of factors that will affect the accuracy, applicability and ease

of data acquisition.

1. Type of monitoring.

   (a) Continuous - In some situations, it may be desirable to monitor for potentially changing hazards throughout the duration of an activity. Instruments may be set up in a specific location or carried by field personnel during work. In most applications, an audible alarm is highly desirable when using an instrument for continuous monitoring.

   (b) Periodic - In most field applications, instruments are operated for short periods of time to collect data. The battery life of instruments can be extended when conducting periodic monitoring.

2. Field Applications.

   Instruments used for field applications should be lightweight, rugged, weather resistant, operable without external power, easy to read and capable of being protected from contamination before use.

   (a) Site Survey - Site surveying is the process of evaluating the general surrounding ambient air conditions at a location. For simple situations, the operator may walk the perimeter of the site and then tour the site taking air samples, while continuously evaluating the instrument's response.

(b) Hazard Identification and Evaluation - This type of instrument use includes:

* Hazard categorization of samples.

* Evaluation of suspected leaking containers.

* Hazard assessment of spilled materials.

(c) Operations Monitoring - Direct-read instruments can also be used to assess changes in various identified or potential hazards caused by on-site activities (sampling, drum handling on-site treatment, spill clean up, etc.).

B. Maintenance.

The importance of proper maintenance and storage can not be overemphasized. After properly selecting an appropriate instrument for field use, proper maintenance (and calibration) as discussed below ultimately affects field usability. Drained instrument batteries defeats the most meticulous selection process.

1. Instrument maintenance usually includes:

(a) Case, exterior and accessories cleaning after each use.

(b) Alarm and meter checks after each use.

(c) Battery checks under load after each use.

* Replacement as needed.

* Recharge as needed.

(d) Periodic manufacturer maintenance.

(e) Records of all repair and maintenance history.

2. Instruments should be stored indoors and protected from dirt or dust. Avoid temperature or moisture extremes. Colorimetric indicator tubes should be refrigerated when not in use.

C. Calibration.

All instruments must be calibrated periodically to verify and ensure accuracy within manufacturer's specifications. Some instruments are calibrated by the factory and require a "calibration-check" by the user, while others are calibrated by the user.

Calibration refers to sampling a known concentration of a chemical and comparing the instrument response to the expected standard response.

D. Field Use.

Because of the wide variety of instruments available for field monitoring use, instructions are limited to individual manufacturer's recommendations. However, the following general instruction on proper instrument use apply to all field instruments:

1. All operators must be trained in instrument use including inspection, start-up, calibration check, sampling and data interpretation.

2. Protect instruments from wind, rain, high humidity, temperature extremes, dust and dirt.

3. Protect instruments from field contamination:

4. Warm-up and check calibrated instruments in a known, clean environment.

5. Perform adequate cleaning in the field prior to packaging for transportation.

6. Avoid sensor saturation. Observe probe placement and meter reading continuously while in operation.

7. Take representative samples:

   (a) At breathing zone for toxic contaminants.

   (b) At vapor space for liquid containers.

   (c) At stratified levels for confined spaces.

*REFERENCE NOTES FOR MODULE IV

MODULE IV

FIELD SAFETY AND PERSONAL PROTECTION

INTRODUCTION

LESSON: 1 - Work Practices and Personal Hygiene

LESSON 2 - Protective Clothing and Equipment

LESSON 3 - Respiratory Protection

LESSON 4 - Chemical Handling

LESSON 5 - Site Control and Decontamination

LESSON 6 - Site Emergencies

INTRODUCTION

FIELD SAFETY AND PERSONAL PROTECTION

The recognition and evaluation of hazards is necessary before appropriate control measures can be selected and implemented. When possible, controls such as ventilation and rotating work shifts should be considered before personal protective controls are used. However, in some situations it may be necessary to use personal protection during field activities. The proper selection and use of personal protective equipment may be compromised if safe work practices and other control measures are not also implemented. Hazard control does not end with the donning of a respirator, but indicates the seriousness of the situation and the need to apply all appropriate control measures. In addition, the use of personal protective equipment must be based on proper selection and the inherent limitations of each item. Ignoring these requirements will likely result in a false sense of security and unanticipated exposures.

LESSON: 1 Work Practices and Personal Hygiene - This section reviews all the basic "rules" each officer must follow in taking personal responsibility for their own safety.

LESSON: 2 Protective Clothing and Equipment - This section discusses the various types of equipment available and their selection, use, limitations and maintenance.

LESSON: 3 Respiratory Protection - This section provides background information on the selection, use, limitations and maintenance of air purifying and air supplied respirators.

LESSON: 4 — Chemical Handling - This section summarizes basic chemical handling techniques and the management of hazardous materials.

LESSON: 5 — Site Control and Decontamination - This section reviews the need for and field implementation of, site control including agent and equipment decontamination techniques.

LESSON 6 — Site Emergencies - This section discusses the various types of anticipated site emergencies and their related planning tasks and response actions.

*REFERENCE NOTES FOR MODULE IV LESSON NO. 1

WORK PRACTICES AND PERSONAL HYGIENE

I. INTRODUCTION.

Personnel responding to illicit drug labs involving chemical substances encounter conditions that are unsafe or potentially unsafe. This section discusses safety measures and precautions associated with the hazardous nature of chemical compounds.

II. RESPONSIBLE WORK APPROACH.

Each individual must assume responsibility for preventing exposure to hazards by performing their tasks properly and following good personal hygiene habits. Personal protection begins with an awareness of possible hazards, a knowledge of routes of exposure, and a disciplined approach to performing tasks. A proper work approach should include:

A. Being aware of the surrounding environment. Learn to recognize hazards in the area.

B. Planning activities and tasks. Briefly discuss your plans with others and document them by using a HARP report and operational plans.. This will give someone else an idea of where you will be, what you will be doing, and how you plan to do it.

C. Continual observation and re-evaluation of the situation. Some chemicals become more hazardous with time due to evaporation, exposure to other chemicals, or heating.

D. Mental rehearsals of possible situations. You will be able to respond quicker to a situation if you are mentally prepared for it to happen.

E. Considering consequences of actions -- always think before acting.

II. IMPLEMENTATION.

The implementation of safe work practices and personal hygiene habits are preventative in nature, as is the use of protective clothing and equipment. They must always be implemented regardless of the level of protection being used. Safe work practices include:

A. Following supervisory instructions and standard operating procedures.

B. Follow training criteria.

C. Working attentively (not rushing).

D. Working as a team (coordination).

E. Not needlessly exposing oneself to hazards.

IV. PERSONAL HYGIENE.

A. Hands and face must be thoroughly washed upon leaving the work area. Simple wind blown dust might be contaminated with chemicals that can be absorbed through the skin. Therefore, even those who do not handle the chemicals should wash before leaving the site.

B. Prevent cross contamination of personal items (clothing, jewelry, etc.) by never exposing these items to contaminated materials or taking them into a contaminated environment.

C. Follow all decontamination procedures including a full body shower with soap when required. This should be done as soon as the protective garment is removed.

D. No eating, drinking, smoking, or chewing gum or tobacco in or near contaminated areas. This will greatly decrease the probability of hand-to-mouth transfer and ingestion of chemicals.

E. Refrain from the use of medication unless approved by a qualified physician.

F. No facial hair which interferes with a satisfactory fit of the mask-to-face-seal is allowed on personnel required to wear respirators. Beard growth of one day can break the seal on a respirator.

G. Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, discolored surfaces, kneel on the ground, or place equipment on drums, containers, or the ground. Always wear gloves to handle anything inside a contaminated area.

V. SITE SAFETY PLANS.

All personnel must be familiar with standard operating safety procedures and any additional instructions and information provided by the Site Safety Officer. The following are examples of the above:

A. All personnel going on-site must be adequately trained and thoroughly briefed, using a HARP report and operations plan, on anticipated hazards, equipment to be worn, safety practices to be followed, emergency procedures and communications.

B. Any required respiratory protective devices and clothing must be worn by all personnel going into areas designated for wearing protective equipment.

C. Personnel on-site must use the buddy system when wearing respiratory protective equipment. As a minimum, a third person, suitably equipped as a safety backup, is required during initial entries.

D. Visual contact must be maintained between pairs on-site. Entry team members should remain close together to assist each other during emergencies.

E. During continual operations, on-site workers act as safety backup to each other. Off-site personnel provide emergency assistance.

F. Personnel should practice unfamiliar operations prior to doing the actual procedure.

G. Entrance and exit locations must be designated and emergency escape routes delineated. Warning signals for site evacuation must be established.

H. Communications using radios, hand signals, signs, or other means must be maintained between initial entry members at all times. Emergency communications should be prearranged for evacuation of the site, or other

reasons.

I. Wind indicators visible to all personnel should be strategically located throughout the site.

J. Personnel and equipment in the contaminated area should be minimized, consistent with effective site operations.

K. Work areas for various operational activities must be established.

L. Procedures for leaving a contaminated area must be planned and implemented prior to going on-site. Decontamination procedures must be established based on expected site conditions.

M. Use common sense.

1. No smoking within fifty (50) feet on flammable and unknown liquids.

2. Never use your sense of smell and touch to determine what a chemical might be.

3. Avoid over exertion during warm weather.

(a) Know your own limits.

(b) Take frequent breaks.

(c) Loosen tight clothing.

(d) Drink plenty of non-alcoholic fluids.

VI. OTHER SAFETY PROCEDURES.

A. Synthetic clothing other than a Nomex suit should not be worn under the exposure suit by any personnel involved in a Clandestine Laboratory crime scene investigation.

B. Contact lenses shall not be worn when using a respirator and/or goggles per General Industry Safety Order Section 5144(h).

C. The wearing of respirators and full or partial beards, mustaches, side-burns, etc., where hair enters between the face and the sealing surface of the respirator is prohibited. General Industry Safety Order 5144(h).

D. Latent print analysts shall not process any contaminated surfaces, items that are covered with residue or process any leaking or open containers which do not have a secured lid.

*REFERENCE NOTES FOR MODULE IV LESSON NO. 2

PROTECTIVE CLOTHING AND EQUIPMENT

I. INTRODUCTION.

The harmful effects of specific chemical and physical hazards may occasionally or routinely require the use of personal protective clothing and equipment (PPE) by employees. Such items may be required to protect employees from anticipated or actual hazards. Therefore, the hazards encountered must be thoroughly assessed before selecting the required PPE.

II. SELECTION CRITERIA.

A. Hazard Assessment.

1. The hazards for which personnel protective clothing and equipment may be required must be properly identified and assessed, otherwise the wrong type and level of protection may be used, resulting in little or no protection for the worker.

Information which should be collected and evaluated includes:

(a) Type of chemical or physical hazard present.
(b) Identify the physical hazards.

* Example: Structure, heat or stress.

(c) Degree of hazard.

Identify the grade, strength and quantity of the chemicals present. Determine the extent and severity of physical hazards (temperature and physical surroundings, etc.).

(d) Type of work, duration and probability of exposure.

B. Performance Requirements.

Protective clothing and equipment items selected to protect the wearer from specific hazards should withstand the use requirements. Products may have different physical characteristics affecting performance and protection. Factors to consider in chemical resistance include:

1. Strength - Ability to withstand tears, abrasions, punctures, stretching and other similar forces.

2. Flexibility - Ability to move freely, allow for manipulation of tools and delicate items (especially with gloves).

3. Temperature Limits - Ability to maintain protective capacity in temperature extremes (hot and cold temperatures).

4. Cleanable - Ability to be washed and decontaminated routinely, affects cost, and control of cross contamination.

5. Durability - Ability to resist aging and maintain protective capacity over time.

C. Chemical Resistance.

All materials used in the manufacture of protective clothing and equipment are susceptible to "attack" by some chemicals. Currently, there is no one material "resistant" to all chemicals. Therefore, it is important to know which material will provide proper protection against specific chemical hazards.

D. Protective Materials.

There is a large variety of natural and synthetic materials used in the manufacturing of PPE.

Elastomers are materials that, after being stretched return to approximately their original shape provide the best protection against chemical attack (solid, liquid or gas). Elastomers are used in boots, gloves, coveralls, and fully encapsulating suits. They are sometimes combined with other materials to enhance durability and protection.

The abilities of elastomers to resist chemical attack range from poor to excellent. The selection of a particular material should be based on its resistance to chemicals and the other performance characteristics.

III. EQUIPMENT.

A. Types of Equipment.

When PPE is required to protect personal from exposure to hazards, usually a number of items are selected and worn rather than a single item. The items selected should complement each other, but not interfere with

proper fit or use. PPE equipment should fit properly, allow reasonable freedom of movement, vision and dexterity. It should also be reasonably comfortable during use so as to not distract or significantly impair the wearer. In addition, many items must also comply with specific performance standards.

1. Examples.

(a) Head Protection

* Hard Hat - Designed to absorb shock.

(b) Eye and Face Protection.

* Safety glasses and goggles - Designed to protect from flying debris, splash and sometimes gases and vapors.

* Face Shields - Protects forehead to below chin.

  - Best used for flying debris and splash.

  - Often used in combination with goggles.

(c) Ear Protection.

* Ear plugs or muffs - Usually selected based on noise attenuation ability.

  - Many different models and types are available.

- Most ear plugs are disposable.

(d) Foot Protection.

* Boots, shoe covers and booties - Designed for traction, chemical protection and protection from falling objects (safety toe).

(e) Hand Protection.

* Gloves - Designed for grip, chemical resistance and protection from irritation/injury.

  - Many different types and styles are available (short or long quantlet, grip surfaces and thickness).

  - Many disposable products available.

(f) Body Protection.

- Designed to protect body from contact with chemicals.

- Many different types and styles are available, including reusable and disposable.

- Arms and legs of suits should always be worn over boots and gloves to prevent splashed materials from draining onto hands and feet.

B. Use.

1. Avoid a false sense of security.

(a) All items have limitations in their protective ability. Use specific protective equipment only for operations or tasks identified by the site safety supervisor.

2. Inspect items before use.

(a) Condition.

* Holes, cuts, tears, excessive wear.

* Cleanliness, disinfected (if reused).

* Free from contamination.

* Function - zippers, snaps, buttons, size, etc.

(b) If an item is damaged or contaminated, do not use it.

3. Disposable vs Reusable.

(a) Dispose of items when:

* Designed for single use (i.e. ear plugs).

* Damaged.

* Contaminated.

* Instructed.

(b) Reusable.

* Reusable items must be decontaminated and cleaned before reuse.

* Follow manufacturers recommendations.

* Use cleaners which will not damage material.

* Inspect for wear and condition.

* Disinfect items such as hard hats, ear muffs, safety glasses, goggles and respirators.

4. Monitor for Potential Heat Stress.

(a) Remember:

* PPE interferes with the body's ability to regulate heat (remove excess heat).

* When the body retains heat, the response can be:

- Heat cramps.

- Heat exhaustion.

- Heat stroke.

(b) Prevention.

* Acclimatization.

* Fluid intake.

* Salt replacement.

* Work/rest regiment.

5. Plan activities before suiting up.

(a) Review site safety requirements.

* Work zones.

* Emergency procedures.

* Buddy system.

* Decontamination procedures.

(b) Prioritize tasks.

* Complete most important tasks first.

* Prepare site for additional work (mitigate immediate hazards, etc).

(c) Practice unfamiliar tasks before entering the work zone.

6. Work within limitation of PPE.

* Move and work purposefully.

* Be aware of PPE interaction with the environment.

  - Wet surfaces (slips).

  - Sharp objects (suit damage).

* Be aware of and adapt to:

  - Limited vision.

  - Limited range of motion.

  - Additional weight.

IV. LEVELS OF PROTECTION.

Because of the diversity of potential chemical and physical hazards associated with hazardous waste handling activities, and the variety of PPE items available, many groups including the U.S. EPA, U.S. Coast Guard and NIOSH have made recommendations regarding the minimum level of PPE suitable for hazardous environments or activities of varying degree. Commonly referred to as Level A, B, C or D, these classification systems immediately identify the severity of the actual or potential hazard and the level of PPE required.

A. Level A.

Level A protection should be worn when the highest available level of respiratory, skin and eye protection is required.

1. Equipment.

EXAMPLES:

* Positive Pressure SCBA (NIOSH/MSHA approved) operated in the positive pressure mode.

* Totally encapsulating suit with boots or booties and gloves attached.

* Inner gloves, chemical-resistant.

* Outer gloves, chemical-resistant, worn over suit gloves depending on suit construction.

* Boots, chemical-protective with steel toe. Worn over suit boot depending on suit construction.

* Disposable booties worn over boots.

* Undersuit-cotton long-john type, Tyvek or coveralls.

* Hard hat - (under suit, optional).

* Disposable protective suit, gloves and boots (worn under or over encapsulating suit, optional)

* 2-way radio communication.

2. Field Application.

EXAMPLES:

* Entry, assessment and take down of Fentanyl and MPTP/MPPP laboratories.

* Entry into poorly ventilated laboratory sites for which there is little or no information known about the process in use or chemicals present. Air monitoring outside the laboratory indicate high airborne contaminant concentrations inside the laboratory.

3. **NOTE:** The determination that Level A protection is required indicates that the existing and/or potential hazards are severe and present potentially life threatening exposures. Only personnel thoroughly trained and proficient in all Level A procedures, (donning, doffing, buddy system, work practices, decontamination, etc.) should be assigned work requiring Level A protection. The following procedures highlight what must be strictly enforced when Level A protection is to be used:

    * Use of a buddy system, preferably pairing people who have previously worked together.

    * <u>One safety standby per person</u> - a person entering a work zone (i.e. an entry team of two persons requires two standby individuals.

    * All safe work practices, tasks, procedures and decontamination

requirements must be reviewed and preferably rehearsed prior to donning equipment and entering the work zone.

* Two-way radio communication between the entry team and the Safety Officer should be used and pre-arranged "check-ins" should be instituted.

* The Safety Officer shall have complete control over entry team activities including approval to enter the work zone and mission abort procedures.

* After donning Level A protection, each member of the entry team and the Safety Officer shall inspect and check each individual for suit integrity, proper donning and tape up, SCBA function, etc., prior to entry.

B. Level B.

Level B protection should be selected when the highest level of respiratory protection is needed, but exposure to small unprotected areas of the body (i.e. neck and back of the head) is unlikely and may not post a serious hazard.

1. Equipment.

EXAMPLES:

* Positive Pressure SCBA (NIOSH/MSHA approved) operated in the positive pressure mode.

* One or two piece chemical-resistant suit with hood.

* Inner gloves, chemical-resistant.

* Outer gloves, chemical-resistant, worn over suit gloves depending on suit construction.

* Boots, chemical-resistant with steel toe.

* Booties, chemical-resistant, disposable (optional).

* Undersuit-cotton long-john type, Tyvek or coveralls.

* Hard hat - (face shield optional).

* Two-way radio communications.

2. Field Application.

EXAMPLES:

* Assessment phase for all laboratory sites.

* When air monitoring measurements exceed the limits for Level C regardless of the type of work being performed (except initial entry).

C. Level C.

Level C protection shall be selected when the types and concentrations of respirable material have been

assessed by an industrial hygienist, the types of hazards are known, and employee protection will be assured.

1. Equipment.

EXAMPLES:

* Full face, air-purifying respirator (NIOSH/MSHA approved) (NOTE: A half face respirator may be selected and used under some circumstances).

* One or two piece chemical-resistant suite (hood optional).

* Inner gloves, chemical-resistant.

* Outer gloves, chemical-resistant, worn over suit gloves depending on suit construction.

* Boots, chemical-resistant with steel toe.

* Booties, chemical-resistant, disposable (optional).

* Cloth coveralls, (inside chemical-resistant, suit optional).

* Hard hat (face shield optional).

* Two-way radio communication (optional).

2. Field Application.

EXAMPLES:

* Laboratory take down phase.

* Handling containers and contaminated items.

* Decontamination assistants (assigned to assist individuals proceeding through the decontamination procedure).

* Decontamination suspects.

D. Level D.

Level D is the basic work uniform and should be worn only when operations are identified as presenting no chemical hazards to personnel.

1. Equipment.

EXAMPLES:

* Coveralls, industrially laundered.

* Boots, chemical-resistant, steel toe.

* Safety glasses or safety goggles, (optional)

* Gloves, chemical-resistant.

2. Field Application.

EXAMPLES:

* Staging, loading and unloading of equipment.

* Off-site reconnaissance.

* Handling samples and evidence in non-contaminated areas after the handling surfaces have been cleaned (i.e. wiped down).

REFERENCE NOTES FOR MODULE IV LESSON NO. 3

I. INTRODUCTION.

The respiratory system is able to tolerate exposures to toxic gases, vapors and particulates, but only to a limited degree. The respiratory system can be protected by avoiding or minimizing exposure to harmful substances. Engineering controls such as ventilation help decrease exposure. When these methods are not feasible, respirators may provide protection. Certain respirators can filter chemicals in the ambient atmosphere, other respirators can supply clean air to the wearer.

The use of respirators is regulated by the Occupational Safety and Health Administration (OSHA). This unit discusses the topics relating to ensure quality respiratory protection.

II. THE RESPIRATORY SYSTEM.

A. Inhalation.

When air is inhaled, the lungs expand and fill with air. Normally air is pulled through the nose, but it also can be inhaled through the mouth and absorbed on the walls of the nose, mouth and throat, while other contaminants penetrate further into the respiratory system.

B. Exhalation.

When air is exhaled, it forces air out of the lungs back along the same route.

III. RESPIRATORY HAZARDS.

An atmosphere containing toxic contaminants, even at very low concentrations, could be a hazard to the lungs and body. A concentration large enough to decrease the percentage of oxygen in the air can lead to asphyxiation.

A. Oxygen Deficiency.

The body requires oxygen to live, if the oxygen concentration decreases, the body reacts in various ways. Death occurs rapidly when the concentration decreases to 6%. Physiological effects of oxygen deficiency are not apparent until the concentration decreases to 16%. In hazardous materials response operations 19.5% oxygen in air is considered the lowest "safe" working concentration.

B. Aerosols.

Aerosol is a term used to describe fine particulates (solid or liquid) suspended in air.

Aerosols can be classified by their physical form and by the physiological effect on the body.

They can be in the form of a spray, mist, fume, fog or smoke. The effect they may have on the body could be:

1. Nuisance - No lung injury but proper lung functioning inhibited.

2. Pulmonary - Effects ranging mild to serious diseases of the lung.

3. Chemical irritation - Irritation, inflammation, or ulceration of lung tissue.

4. Systemic poison - Diseases in other parts of the body.

5. Allergy-producing - Causes allergic hypersensitivity reactions such as itching or sneezing.

C. Gases and Vapors.

Gases and vapors are filtered to some degree on their trip through the respiratory tract. The remainder may be directly absorbed into the bloodstream.

IV. RESPIRATORY PROTECTION DEVICES.

The basic function of a respirator is to reduce the risk of respiratory injury due to breathing airborne contaminants. A respirator provides protection by removing the contaminants from the air or by supplying clean breathing air.

All respiratory apparatus are composed of two main parts: (1) the device which supplies or purifies air, and (2) the facepiece which covers the nose and mouth and seals out the contaminants.

A. Classes of Respirators.

There are major classifications of respirators that will be used at Clandestine Drug Laboratories.

1. Air Purifying Respirator (APR) - Air purifying respirators remove contaminants by passing the

breathing air through a purifying element. It is important to realize that there are limitations on the applications of APRs. These devices are specific for certain types of contaminants, so the identity and concentration of the hazardous agent must be known. Since APRs only clean the air, the ambient concentration of oxygen must be above 19.5%.

(a) Selection - The selection of respiratory protective equipment is made by the Site Safety Officer. These decisions should consider:

* Type and concentration of chemical hazard.

* Nature and duration of work activities.

* Regulations.

* Chemical reference information.

(b) Restrictions - The following are some restrictions prohibiting the use of an APR:

* Respirator is not NIOSH approved.

* User is untrained in the use of an APR.

* Face seal is obstructed by facial hair or other physical restrictions (eye glasses, headbands, etc.).

* Fire fighting.

* Insufficient oxygen (less than 19.5%).

* Toxic levels of airborne chemicals exceeds the level set by the manufacturer.

(c) Breakthrough - Breakthrough is a term used to describe what happens when the cartridge or canister capacity of the APR has been exceeded and the chemical breaks through and is inhaled by the user. Therefore, it is required by law that APRs can only be used for chemicals that have good warning properties. If breakthrough occurs, the user will either smell, taste or be irritated by the chemical.

(d) Resistance - Resistance refers to physical blockage of the cartridge caused by dust or particulate buildup. Resistance is observed by increased effort required to inhale through the respirator.

2. Supplied Air Respirator/Self Contained Breathing Apparatus (SCBA) - SCBAs provide a substitute source of clean breathing air. The air is supplied to the worker from a backpack cylinder.

This device can be used for many highly toxic types of airborne contaminants. However, the concentration limits vary for the different types of contaminants, and the wearer must be aware of the limitations of the respirator.

(a) Applications - Allows work in atmospheres for which a cartridge respirator or gas mask is not allowed and/or approved. Examples of these situations would be in areas of exposure to:

* Unknown atmospheres.

* Chemicals with poor warning properties.

* Chemical for which the use of an APR is not recommended.

(b) Selection - The selection of respiratory protective equipment is made by the Site Safety Officer. These decisions should be based upon:

* type and concentration of the chemical.

* Nature and duration of the work activity.

* Regulations.

* Chemical reference information.

(c) Restrictions - The following restrictions prohibit the use of an SCBA:

* SCBA is not NIOSH approved.

* SCBA is not approved for the situation.

* User is untrained in the use of an SCBA.

* Face seal is obstructed by facial hair or other physical restrictions (eye glasses, headbands, etc.).

B. Respirator Mask.

The protection provided the respirator wearer is a function of how well the mask fits. No matter how efficient the purifying element or how clean the supplied air, there is little protection afforded if the respirator mask does not provide a leak-free facepiece-to-face seal.

1. Initial Fit-Test - Not all respirators fit everyone, so each individual must find out which masks they can properly wear.

2. Field Fit-Testing - Each respirator user should perform field fit-tests before a respirator is used while at an enforcement scene. These tests are performed to make sure that the user has properly fitted the mask to the face.

3. Facial Hair - The use of respirators is prohibited when conditions prevent a good facepiece-to-face seal. Some examples of these conditions are beards, sideburns, mustaches, long hair, make-up, and temple pieces on eyeglasses. Because maintaining the leak-free seal is so important, personnel required to wear respirators must successfully pass a fit-test designed to check the integrity of the seal.

V. RESPIRATOR USE AND SELECTION.

A. OSHA Requirements.

The health of a respirator wearer is based on how the respirator is used. The requirements for a minimal acceptable program are quoted from 29 CFR 1910.134 as follows:

1. Written standard operating procedures governing the selection and use of respirators shall be established.

2. Respirators shall be selected on the basis of hazards to which the worker is exposed.

3. The user shall be instructed and trained in the proper use of respirators and their limitations.

4. Respirators shall be regularly cleaned and disinfected. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.

5. Respirators shall be stored in a convenient, clean and sanitary location.

6. Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.

7. Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be

maintained.

8. There shall be a regular inspection and evaluation to determine the continued effectiveness of the program.

9. Individuals should not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator's user's medical status should be reviewed periodically (for instance annually).

10. Approved or accepted respirators shall be used when they are available. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is approved, in accordance with standards established by NIOSH or USBM.

B. Selection Criteria.

1. The nature of the hazard.

2. The characteristics of the hazardous operation or process.

3. The location of the hazardous area with respect to a safe area having respirable air.

4. The period of time for which respiratory protection may be provided.

5. The activity of workers in the hazardous area.

6. The respirator protection factor and respirator limitations.

C. Respirator Selection.

Enforcement activities at a Clandestine Drug Laboratory are divided into three phases; Entry, Appraisal and Dismantling. One Federal Enforcement Agency has developed strict guidelines regarding respiratory protection during each phase. Entry team personnel are not required to wear respiratory protection. However, time spent in the lab should be kept to a minimum. An SCBA must be worn by each member of the Appraisal team. The Dismantling team must wear a gas mask. Additional situations may arise that will require a decision as to what type of respirator should be worn. Criteria to aid that decision is outlined below.

VI. SAFE WORK PRACTICES.

It is the responsibility of the Site Safety Officer to ensure that all law enforcement related personnel follow safe work practices. There are specific work tasks related to the use of an SCBA.

A. Pre-Enforcement Preparation.

There are several things that should be done prior to the first phase of a possible entry and arrest. Being prepared well in advance will greatly reduce the time it takes to respond.

1. Each SCBA should be inspected and tagged at least

once per month. The case should be sealed with a thin plastic electrical tie-wrap. This will ensure that the SCBA is inspected and ready for use. The tag should be visible, dated and signed.

2. Take enough extra SCBA cylinders to ensure that the job can be completed safely. (The local fire department will usually refill SCBA cylinders upon request).

3. Take enough air purifying respirator filters and gas mask canisters to ensure the job can be completed safely.

4. Each face-piece should be cleaned, disinfected and inspected after each use. It should then be sealed into a plastic bag. The bag should be tagged in a fashion similar to the SCBA.

B. Lab Appraisal and Dismantling.

Certain work practices should be followed to ensure the safety of all personnel.

1. Check the equipment before donning and using, short cuts can be life endangering.

2. Plan the work activities before entering the lab scene (conserve your energy and the air supplies available at the job site).

3. A Safety standby must ALWAYS be assigned whenever SCBAs are used and must be fully suited and equipped with an SCBA.

4. When using SCBA, work purposefully, pace your work and breathing, avoid heavy exertion, and think before doing.

5. Never enter a hazardous area with a SCBA that has less than a full cylinder of air or a gas mask with a canister that has exceeded its capacity or is not the correct type.

C. Buddy System.

Utilize the buddy system with appropriate communications as required whenever working in a hazardous situation that calls for the use of SCBAs.

1. Establish a buddy system for personnel entering the work area. Always work in groups of two.

2. Plan for emergencies.

   (a) Establish a signal to indicate emergency evacuation.

   (b) Designate emergency evacuation routes and a regroup area.

   (c) Place emergency equipment in the regroup area (fire extinguisher, first aid kit, etc.).

3. Establish the signals to be used between personnel in the work area and with the Safety standby.

4. Common hand signals are:

   (a) Index finer pointed by buddy: Are you Okay?

(b) Thumbs up: I am Okay!

(c) Finger pointed at wrist (watch): time to leave, out of air.

(d) Hands on throat: EMERGENCY, can't breathe.

D. Air Cylinder Safety.

Compressed air cylinders that are full can be extremely dangerous if mishandled. General safety rules for their proper use are listed below.

1. Handle all cylinders (empty or full) carefully in order to protect the neck and valve area from damage or abuse.

2. Inspect cylinders for thread wear, rust, dirty fittings, damage, etc., before use.

3. All cylinders shall be stored upright and restrained to prevent "tip-overs", or laid flat on the ground and blocked to prevent rolling.

4. Never run a bottle completely "dry". The negative pressure can allow moisture or contaminants into the bottle.

5. Keep all air cylinders away from flames or heat sources.

6. Always protect cylinders and especially the neck and valve area from damage, moisture, dirt and/or chemical contamination.

7. Never over tighten cylinder connections.

8. SCBA cylinders must only be filled by a trained technician using proper equipment and procedures.

9. Cylinders must be properly labeled "Compressed Air".

toxic gases, vapors and particulates, but only to a limited degree. The respiratory system can be protected by avoiding or minimizing exposure to harmful substances. Engineering controls such as ventilation help decrease exposure. When these methods are not feasible, respirators may provide protection. Certain respirators can filter chemicals in the ambient atmosphere, other respirators can supply clean air to the wearer.

The use of respirators is regulated by the Occupational Safety and Health Administration (OSHA). This unit discusses the topics relating to ensure quality respiratory protection.

II. THE RESPIRATORY SYSTEM.

A. Inhalation.

When air is inhaled, the lungs expand and fill with air. Normally air is pulled through the nose, but it also can be inhaled through the mouth and absorbed on the walls of the nose, mouth and throat, while other contaminants penetrate further into the respiratory system.

B. Exhalation.

When air is exhaled, it forces air out of the lungs back

along the same route.

III. RESPIRATORY HAZARDS.

An atmosphere containing toxic contaminants, even at very low concentrations, could be a hazard to the lungs and body. A concentration large enough to decrease the percentage of oxygen in the air can lead to asphyxiation.

A. Oxygen Deficiency.

The body requires oxygen to live, if the oxygen concentration decreases, the body reacts in various ways. Death occurs rapidly when the concentration decreases to 6%. Physiological effects of oxygen deficiency are not apparent until the concentration decreases to 16%. In hazardous materials response operations 19.5% oxygen in air is considered the lowest "safe" working concentration.

B. Aerosols.

Aerosol is a term used to describe fine particulates (solid or liquid) suspended in air.

Aerosols can be classified by their physical form and by the physiological effect on the body.

They can be in the form of a spray, mist, fume, fog or smoke. The effect they may have on the body could be:

1. Nuisance - No lung injury but proper lung functioning inhibited.

2. Pulmonary - Effects ranging mild to serious

diseases of the lung.

3. Chemical irritation - Irritation, inflammation, or ulceration of lung tissue.

4. Systemic poison - Diseases in other parts of the body.

5. Allergy-producing - Causes allergic hypersensitivity reactions such as itching or sneezing.

C. Gases and Vapors.

Gases and vapors are filtered to some degree on their trip through the respiratory tract. The remainder may be directly absorbed into the bloodstream.

IV. RESPIRATORY PROTECTION DEVICES.

The basic function of a respirator is to reduce the risk of respiratory injury due to breathing airborne contaminants. A respirator provides protection by removing the contaminants from the air or by supplying clean breathing air.

All respiratory apparatus are composed of two main parts: (1) the device which supplies or purifies air, and (2) the facepiece which covers the nose and mouth and seals out the contaminants.

A. Classes of Respirators.

There are major classifications of respirators that will be used at Clandestine Drug Laboratories.

1. Air Purifying Respirator (APR) - Air purifying respirators remove contaminants by passing the breathing air through a purifying element. It is important to realize that there are limitations on the applications of APRs. These devices are specific for certain types of contaminants, so the identity and concentration of the hazardous agent must be known. Since APRs only clean the air, the ambient concentration of oxygen must be above 19.5%.

   (a) Selection - The selection of respiratory protective equipment is made by the Site Safety Officer. These decisions should consider:

   * Type and concentration of chemical hazard.

   * Nature and duration of work activities.

   * Regulations.

   * Chemical reference information.

   (b) Restrictions - The following are some restrictions prohibiting the use of an APR:

   * Respirator is not NIOSH approved.

   * User is untrained in the use of an APR.

   * Face seal is obstructed by facial hair or other physical restrictions (eye glasses, headbands, etc.).

* Fire fighting.

* Insufficient oxygen (less than 19.5%).

* Toxic levels of airborne chemicals exceeds the level set by the manufacturer.

(c) Breakthrough - Breakthrough is a term used to describe what happens when the cartridge or canister capacity of the APR has been exceeded and the chemical breaks through and is inhaled by the user. Therefore, it is required by law that APRs can only be used for chemicals that have good warning properties. If breakthrough occurs, the user will either smell, taste or be irritated by the chemical.

(d) Resistance - Resistance refers to physical blockage of the cartridge caused by dust or particulate buildup. Resistance is observed by increased effort required to inhale through the respirator.

2. Supplied Air Respirator/Self Contained Breathing Apparatus (SCBA) - SCBAs provide a substitute source of clean breathing air. The air is supplied to the worker from a backpack cylinder.

This device can be used for many highly toxic types of airborne contaminants. However, the concentration limits vary for the different types of contaminants, and the wearer must be aware of

the limitations of the respirator.

(a) Applications - Allows work in atmospheres for which a cartridge respirator or gas mask is not allowed and/or approved. Examples of these situations would be in areas of exposure to:

* Unknown atmospheres.

* Chemicals with poor warning properties.

* Chemical for which the use of an APR is not recommended.

(b) Selection - The selection of respiratory protective equipment is made by the Site Safety Officer. These decisions should be based upon:

* type and concentration of the chemical.

* Nature and duration of the work activity.

* Regulations.

* Chemical reference information.

(c) Restrictions - The following restrictions prohibit the use of an SCBA:

* SCBA is not NIOSH approved.

* SCBA is not approved for the situation.

* User is untrained in the use of an SCBA.

* Face seal is obstructed by facial hair or other physical restrictions (eye glasses, headbands, etc.).

B. Respirator Mask.

The protection provided the respirator wearer is a function of how well the mask fits. No matter how efficient the purifying element or how clean the supplied air, there is little protection afforded if the respirator mask does not provide a leak-free facepiece-to-face seal.

1. Initial Fit-Test - Not all respirators fit everyone, so each individual must find out which masks they can properly wear.

2. Field Fit-Testing - Each respirator user should perform field fit-tests before a respirator is used while at an enforcement scene. These tests are performed to make sure that the user has properly fitted the mask to the face.

3. Facial Hair - The use of respirators is prohibited when conditions prevent a good facepiece-to-face seal. Some examples of these conditions are beards, sideburns, mustaches, long hair, make-up, and temple pieces on eyeglasses. Because maintaining the leak-free seal is so important, personnel required to wear respirators must successfully pass a fit-test designed to check the integrity of the seal.

V. RESPIRATOR USE AND SELECTION.

A. OSHA Requirements.

The health of a respirator wearer is based on how the respirator is used. The requirements for a minimal acceptable program are quoted from 29 CFR 1910.134 as follows:

1. Written standard operating procedures governing the selection and use of respirators shall be established.

2. Respirators shall be selected on the basis of hazards to which the worker is exposed.

3. The user shall be instructed and trained in the proper use of respirators and their limitations.

4. Respirators shall be regularly cleaned and disinfected. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.

5. Respirators shall be stored in a convenient, clean and sanitary location.

6. Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.

7. Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained.

8. There shall be a regular inspection and evaluation to determine the continued effectiveness of the program.

9. Individuals should not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator's user's medical status should be reviewed periodically (for instance annually).

10. Approved or accepted respirators shall be used when they are available. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is approved, in accordance with standards established by NIOSH or USBM.

B. Selection Criteria.

1. The nature of the hazard.

2. The characteristics of the hazardous operation or process.

3. The location of the hazardous area with respect to a safe area having respirable air.

4. The period of time for which respiratory

protection may be provided.

5. The activity of workers in the hazardous area.

6. The respirator protection factor and respirator limitations.

C. Respirator Selection.

Enforcement activities at a Clandestine Drug Laboratory are divided into three phases; Entry, Appraisal and Dismantling. One Federal Enforcement Agency has developed strict guidelines regarding respiratory protection during each phase. Entry team personnel are not required to wear respiratory protection. However, time spent in the lab should be kept to a minimum. An SCBA must be worn by each member of the Appraisal team. The Dismantling team must wear a gas mask. Additional situations may arise that will require a decision as to what type of respirator should be worn. Criteria to aid that decision is outlined below.

VI. SAFE WORK PRACTICES.

It is the responsibility of the Site Safety Officer to ensure that all law enforcement related personnel follow safe work practices. There are specific work tasks related to the use of an SCBA.

A. Pre-Enforcement Preparation.

There are several things that should be done prior to the first phase of a possible entry and arrest. Being prepared well in advance will greatly reduce the time it takes to respond.

1. Each SCBA should be inspected and tagged at least once per month. The case should be sealed with a thin plastic electrical tie-wrap. This will ensure that the SCBA is inspected and ready for use. The tag should be visible, dated and signed.

2. Take enough extra SCBA cylinders to ensure that the job can be completed safely. (The local fire department will usually refill SCBA cylinders upon request).

3. Take enough air purifying respirator filters and gas mask canisters to ensure the job can be completed safely.

4. Each face-piece should be cleaned, disinfected and inspected after each use. It should then be sealed into a plastic bag. The bag should be tagged in a fashion similar to the SCBA.

B. Lab Appraisal and Dismantling.

Certain work practices should be followed to ensure the safety of all personnel.

1. Check the equipment before donning and using, short cuts can be life endangering.

2. Plan the work activities before entering the lab scene (conserve your energy and the air supplies available at the job site).

3. A Safety standby must ALWAYS be assigned whenever SCBAs are used and must be fully suited and

equipped with an SCBA.

4. When using SCBA, work purposefully, pace your work and breathing, avoid heavy exertion, and think before doing.

5. Never enter a hazardous area with a SCBA that has less than a full cylinder of air or a gas mask with a canister that has exceeded its capacity or is not the correct type.

C. Buddy System.

Utilize the buddy system with appropriate communications as required whenever working in a hazardous situation that calls for the use of SCBAs.

1. Establish a buddy system for personnel entering the work area. Always work in groups of two.

2. Plan for emergencies.

   (a) Establish a signal to indicate emergency evacuation.

   (b) Designate emergency evacuation routes and a regroup area.

   (c) Place emergency equipment in the regroup area (fire extinguisher, first aid kit, etc.).

3. Establish the signals to be used between personnel in the work area and with the Safety standby.

4. Common hand signals are:

(a) Index finer pointed by buddy: Are you Okay?

(b) Thumbs up: I am Okay!

(c) Finger pointed at wrist (watch): time to leave, out of air.

(d) Hands on throat: EMERGENCY, can't breathe.

D. Air Cylinder Safety.

Compressed air cylinders that are full can be extremely dangerous if mishandled. General safety rules for their proper use are listed below.

1. Handle all cylinders (empty or full) carefully in order to protect the neck and valve area from damage or abuse.

2. Inspect cylinders for thread wear, rust, dirty fittings, damage, etc., before use.

3. All cylinders shall be stored upright and restrained to prevent "tip-overs", or laid flat on the ground and blocked to prevent rolling.

4. Never run a bottle completely "dry". The negative pressure can allow moisture or contaminants into the bottle.

5. Keep all air cylinders away from flames or heat sources.

6. Always protect cylinders and especially the neck

and valve area from damage, moisture, dirt and/or chemical contamination.

7. Never over tighten cylinder connections.

8. SCBA cylinders must only be filled by a trained technician using proper equipment and procedures.

9. Cylinders must be properly labeled "Compressed Air".

*REFERENCE NOTES FOR MODULE IV LESSON NO. 4

CHEMICAL HANDLING

I. INTRODUCTION.

The chemicals present at a Clandestine Laboratory scene are considered hazardous; therefore, applicable federal and state regulations must be adhered to when handling these substances. In addition, proper planning, handling and control of these chemicals at a scene is critical to minimize hazards and risks to human health and the environment. Section IV consists of two parts, Applicable Regulations and Chemical Handling On The Scene.

II. REGULATION OVERVIEW.

Hazardous materials and hazardous wastes are almost regarded analogous with respect to Federal regulations and standards. Since the regulations are so similar, this overview shall concentrate on hazardous waste regulations.

A. Federal Regulations "RCRA".

The Resource Conservation and Recovery Act (RCRA) mandates the control of hazardous waste from its initial generation to its ultimate disposal. RCRA specifically addresses standards that are applicable to generators, transporters and hazardous waste treatment, storage and disposal facilities.

1. RCRA, an amendment to the Solid Waste Disposal Act, was passed by Congress in 1976 to assure that all solid and liquid wastes were managed properly.

(a) A "hazardous waste" is a waste or combination of wastes, which because of its quantity, concentration or physical, chemical or infectious characteristics may either:

* Cause or significantly contribute to an increase in mortality or increase serious irreversible, or incapacitating reversible illness.

* Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed.

2. The management of hazardous waste is known as the cradle-to-grave in which the system must control the hazardous waste from the time it is generated until its ultimate disposal. A hazardous waste generator, transporter, and treatment storage and disposal owner or operator must comply with all terms and conditions that are set forth in RCRA.

(a) A summary of RCRA requirements specific to a generator, transporter, treatment storage and disposal owner or operator follows:

GENERATOR	TRANSPORTER	TSD FACILITY
A generator must receive an EPA identification number prior to treatment, storage and transportation of a hazardous waste.	A transporter must receive an EPA identification then number prior to transport of a hazardous waste.	Before an owner or operator treats, stores, or disposes of any hazardous waste, he must obtain a detailed chemical and physical analysis of a representative sample of the waste.
A generator who transports hazardous waste must prepare a manifest before transporting the waste off site.	A transporter may not accept hazardous waste from a generator unless it is accompanied by a manifest and signed by the generator.	The owner or operator must inspect his facility for malfunctions and deterioration, operator error and discharges which may be causing, or may lead to, the release of hazardous waste constituents to the environment or threaten human health.
Before transporting or offering hazardous waste for transportation off-site, a generator must label each package.	Before transporting the hazardous waste, the transporter must sign and date the manifest acknowledging acceptance of the hazardous waste from the generator. The transporter must return a signed copy to the	The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste.

	generator before leaving the generator's property.	
Before transporting or offering hazardous waste for transportation off-site, a generator must mark each package of hazardous waste.	The transporter must ensure that the manifest accompanies the hazardous waste.	Facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil or surface water which could threaten human health or the environment.
Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator must placard or offer the initial transporter the appropriate placards.	A transporter who delivers a hazardous waste to the designated facility must obtain the date of delivery and the handwritten signature of the owner or operator of the designated facility on the manifest.	The owner or operator must attempt to familia the Police, Fire Depts. and local Hospitals of hazardous wastes handle at the facility and the associated hazards.
A generator must keep a copy of each manifest for three years or until he receives a signed copy from the designated facility.	A transporter of hazardous waste must keep a copy of the manifest signed by the generator, himself and the next designated transporter	A contingency plan must be maintained at the facility. At all times there shall be an Emergency

or the owner or operator of the designated facility for a period of three years from the date the hazardous waste was accepted by the initial transporter

Coordinator on the facility premises or on call.

If a facility receives hazardous waste accompanied by a manifest, the owner or operator must process that manifest.

The owner or operator must retain at the facility a copy of each manifest for at least three years from the date of delivery.

B. Federal Regulations "CERCLA".

The Comprehensive Environmental Responses Compensation and Liability Act of 1980, (CERCLA) is best known for its establishment of Superfund for cleanup of hazardous substances which have been released to the environment. The Superfund law authorizes the Federal Government to respond directly to releases (or threatened releases) of hazardous substances and pollutants or contaminants which may endanger public health or welfare. The United States Environmental Protection Agency (EPA) is responsible for managing the Superfund program.

1. Major provisions of CERCLA include:

(a) Establishment of a $1.6 billion fund to clean up deposits and spills of hazardous substances and to fund remedial action when hazardous material releases are threatened.

* This fund is reimbursable. The government generally can take legal action to recover its cleanup costs from those subsequently identified as responsible for the release. Anyone liable for a release who fails to take ordered actions, is liable for punitive damages equal to three times the government's response costs.

(b) Establishment of liability. In general, carriers, disposal facility operators, and other involved in the disposal or transporting process of hazardous substances are liable for all costs of removal or

remedial action incurred by the government, including response costs, and for damages to natural resources.

2. The guidelines and procedures that the Federal Government will follow in implementing the Superfund law are spelled out in a flexible regulatory document called "The National Contingency Plan". The Superfund program is built on the recognition that responses and cleanups must be tailored to the specific needs of each site or release of hazardous substances.

3. States are encouraged to take responsibility for an increasing number of Superfund-financed remedial actions. Under the law, State governments may plan and manage responses under agreement with the Federal Government.

III. CLANDESTINE LABORATORY SCENE REGULATIONS

This sub-section shall review some of the hazardous material regulations, with regard to the generator and transporter at a Clandestine Laboratory.

A. Generator Requirements.

The Seizing Law Enforcement Agency shall take control of the Clandestine Laboratory scene and assume certain roles and responsibilities of a generator who produces hazardous material or hazardous waste.

1. It shall be the responsibility of the seizing agency to obtain an Environmental Protection Agency (EPA) identification number (EPA I.D. No.)

prior to transportation of the hazardous material or waste.

(a) The EPA I.D. No. may be obtained through one of the following mechanisms:

* The seizing agency may have an EPA I.D. No. issued per site for application at any Clandestine Laboratory.

* The seizing agency may have an EPA I.D. No. issued. However, the authorization to use this number must be granted by a Federal or State Official.

* A local county may have an EPA I.D. No. In some situations, the EPA I.D. No. may be applied to a Clandestine Laboratory upon approval from the County Official.

* An EPA I.D. No. is granted only to a generator of a hazardous material or hazardous waste. Obtaining an EPA I.D. No. varies from region to region. A list of EPA Regional offices follows:

EPA REGION I
JFK Federal Building
Boston, MA 02203
(617) 565-3715

EPA REGION II
26 Federal Plaza, Rm 900
New York, NY 10278

EPA REGION VI
The Allied Bank Tower Building
1445 Ross Avenue
Dallas, TX 75202
(214) 655-2100

EPA REGION VII
726 Minnesota Ave
Kansas City, KS 66101

(212) 264-2525

(913) 236-2800

EPA REGION III
841 Chestnut Street
Philadelphia, PA 19107
(215) 597-9800

EPA REGION VIII
One Denver Place
999 18th Street, Suite 500
Denver CO 80202-2405
(303) 293-1603

EPA REGION IV
345 Cortland St., N.E.
Atlanta, GA 30365
(404) 347-4727

EPA REGION IX
215 Fremont Street
San Francisco, CA 94105
(415) 974-8153

EPA REGION V
230 S. Dearborne St.
Chicago, IL 60604
(312) 353-2000

EPA REGION X
1200 6th Avenue
Seattle, WA 98101
(206) 442-5810

2. The seizing agency must sign the bill of lading or manifest and assume the responsibility that the paperwork is legible, accurate and complete.

3. The seizing agency shall be accountable for the proper packaging and labeling of containers. A hazardous material contracting service may indirectly assume this responsibility. However, the legal responsibility is that of the seizing agency.

4. The seizing agency must keep a copy of the manifest for thirty years or until they receive a signed copy from the designated disposal facility.

B. Hazardous Material/Waste Transportation.

The transportation of hazardous substances is an essential activity in the cradle-to-grave system. Growing concern is expressed regarding the hazards that the transportation of these substances may entail. Based on these concerns, the United States Department of Transportation has developed hazardous substance regulation with respect to transportation. The regulations can be found in the Code of Federal Regulation, Title 49, Transportation.

1. Straight Bill of Lading - A hazardous material bill of lading is a document used to identify hazardous materials and track these materials through the transportation process. A carrier may not transport hazardous materials unless they are accompanied by a bill of lading.

   (a) The United States Department of Transportation defines "Hazardous Material" as:

   "...a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety and property when transported in commerce, and which has been so designated".

2. Manifest - A hazardous waste manifest is a document used to identify hazardous wastes that are being transported and to track hazardous wastes from point of generation to disposal/re-use (cradle to grave).

   (a) The United States Department of

Transportation defines a waste as a hazardous waste if one or more of the following hazard codes apply:

Ignitable Waste
Corrosive Waste
Reactive Waste
EP Toxic Waste
Acute Hazardous Waste
Toxic Waste

(b) Uniform Hazardous Waste Manifest Requirements

* The generator is responsible for completing the manifest and signing the certification as to the accuracy, completeness and legibility.

* The generator must designate a Treatment, Storage and Disposal (TSD) facility to receive the waste.

  - The generator may designate an alternative TSD facility to receive the waste if the disposal facility does not accept the waste.

(c) Additional Department of Transportation Requirements.

* The person engaged in transportation of hazardous waste must hold a valid registration.

* Hazardous wastes that are transported

shall have the package marked with the proper shipping name and identification number (the identification number must be recognized by the United Nations (UN) or North America (NA).

* Hazardous wastes that are transported shall be labeled with respect to the materials hazard class. Example: Flammable Solid, Corrosive, etc.

* Hazardous wastes that are transported must be posted on each end and each side of the vehicle. Standard requirements for placards must be followed.

* Incompatible hazardous wastes shall not be mixed together for the purpose of transportation.

3. Container Selection - Container selection to transport a hazardous material or a hazardous waste depends on these basic guidelines:

* concentration of the substance.

* pH of the substance.

* Volume of the substance.

  - Small amounts are generally packed in ten gallon containers.
  - Commonly, 55-gallon drums are used to store and haul hazardous substances.

* Compatibility of the substance.

  - A hazardous substance shall not react to impair the container.

  - Preferably, water reactive substances are placed in 10-gallon containers.

C. Hazardous Material/Waste Contracting Service.

1. Tons of hazardous materials and hazardous wastes are treated, stored, transported, and disposed of annually. The laws, regulations, guidelines, and standards required for the management of these substances are numerous and extremely complex.

   A hazardous material/waste full service contracting company can provide the technical interpretation assistance required to implement the detailed and intrinsic laws, regulations, guidelines, and standards. A primitive trucking or shipping firm is unaware of all the detailed laws and cannot provide the necessary technical assistance.

2. Services and capabilities that may be provided by a full range Hazardous Material/Waste Contractor Service.

   (a) Trained personnel that are technically qualified and experienced in handling the complete range of hazardous substances.

   (b) Clandestine Laboratory scene evaluation performed by an Industrial Hygienist, based on Health and Safety issues.

(c) Evaluation of exposures to airborne chemicals.

(d) Clandestine Laboratory scene appraisals.

(e) Identification of unknown hazardous substances.

(f) Detailed assistance on Hazardous Material/Waste packaging and container selection.

(g) Manifest or Bill of Lading preparation.

(h) Temporary storage of hazardous material.

(i) A competent Hazardous Material/Waste Contractor Service is fully insured and operates in full compliance with all applicable Federal, State, and local laws and regulations.

IV. FIELD OPERATION

A large variety and number of chemicals may be present at a Clandestine Laboratory. In addition, many substances at the site may be unknown. Caution and conservative actions are appropriate and necessary in the environmental setting of a Clandestine Laboratory. Adequate planning and control of the hazards involved at the scene will minimize the risks to human health and the environment.

A. Clandestine Laboratory Assessment.

1. Clandestine Laboratory assessment provides the necessary information to identify the chemicals and hazards associated with the Clandestine Laboratory scene. Scene information which is

accurate, detailed and complete is essential for proper chemical handling and to protect human health and the environment. All personnel at a Clandestine Laboratory scene should be aware of scene conditions and possible changes to these conditions.

The entire assessment process is documented using a Hazard Appraisal and Recognition Plan (HARP) form. The HARP form is designed to collect and document all relevant health and safety information specific to each Clandestine Laboratory site. The form is initiated prior to field work, updated throughout all phases of field work and appropriately filed following each operation.

2. Clandestine Laboratory assessment generally proceeds through three separate phases:

(a) Prior to the arriving at the site.

* Analyzing and assessing known information concerning the site.

(b) Preliminary on the scene assessment.

* The initial Clandestine Laboratory assessment provides the basic information with respect to the type and amount of hazardous substances at the scene and the condition of the containers. The hazardous material at the site should be categorized as follows:

Hazard Classification.

- Reactive
- Incompatible
- Flammable
- Corrosive

Hazard Condition.

- Leaking/Deteriorated
- Bulging
- Explosive/Shock-Sensitive

(c) Site reassessment

Following the Clandestine Laboratory assessment a work plan is developed with respect to the proper handling of the hazardous materials. This plan may address the work to be accomplished, such as sampling and separating the hazardous materials or securing the scene until the Hazardous Materials Consulting Services arrive.

3. Remember, scene assessment is a continuous process. during each phase of assessment, information is gathered and evaluated. This information is necessary to identify potential hazards and to determine the appropriate control measures.

B. Initial Hazard Mitigation.

* During the Clandestine Laboratory assessment it may be immediately necessary to abate some

hazardous conditions to prevent a future elevated hazard. For example, a gas cylinder which is laying on its side should be positioned upright if the container is in good condition. Stop a leaking valve, faucet, pipe or storage container. containers which are knocked over and the hazardous material is spilling out should be placed in the upright position. Small fires can be extinguished. While these hazards may be immediately and easily abated, care and caution must be applied when minimizing hazard risks.

C. Site Control.

1. To reduce the spread of hazardous materials designated work areas should be assigned for operational procedures. The establishment of dedicated work areas ensure that personnel are aware of the hazards present where they are working and possible contamination will be confined to that specific area.

2. The degree of site control depends on the site characteristics, site size, and the surrounding environment. site control measures should be consistent with the appraisal of the Clandestine Laboratory. Modifications to the site control program are made as new information is gathered.

   (a) Clandestine Laboratory scenes should be divided into as many different work areas as needed to meet the operation and safety objectives while maintaining site control (work zones, decontamination zone, and support zone). Dedicated work areas within

dedicated work zones include:

* A work area for sampling of the hazardous material should be established independent of the chemical separation and storage area.

* An area for hazardous material separation, segregation and storage is necessary to prevent accidental ignition or reaction of ignitable or reactive materials.

* A container holding a incompatible substance should be physically segregated from other materials by means of a dike, berm, wall or other device. The proper storage of hazardous substances shall minimize the possibility of a fire, explosion, or the unplanned release of hazardous substances.

D. Handling Hazardous Waste Containers.

1. Accidents may occur during handling of hazardous material containers. Hazards include detonations, fires, explosions, vapor generation, and physical injury resulting from moving heavy containers by hand and working around stacked and deteriorated containers. While these hazards are always present, proper work practices-such as minimizing handling and using proper equipment and procedures can minimize the risks to scene personnel.

2. The appropriate procedures for handling containers depend on the container contents. Thus, prior to any handling, containers should be visually inspected to gain as much information as possible about their contents. The appraisal crew should look for:

   (a) Symbols, words, or other marks indicating that its contents are hazardous, e.g., explosive, corrosive, toxic, flammable.

   (b) Symbols, words, or other marks indicating that it contains discarded laboratory chemicals, reagents, or other potentially dangerous materials in small-volume individual containers.

   (c) Signs of deterioration such as corrosion, rust, and leaks.

   (d) Signs that the drum is under pressure such as swelling and bulging. Monitoring should be conducted around the containers.

   * As a precautionary measure, assume that unlabeled containers contain hazardous materials until their contents are characterized. Also, bear in mind that containers are frequently mislabeled. Thus, a container's label may not accurately describe its contents.

3. The purpose of handling a container is to:

   (a) Respond to any obvious problems that might

impair worker safety (such as leakage or the presence of explosive substances).

(b) Dismantle glassware and position containers for sampling.

(c) Organize containers for storage/disposal into a separate chemical group.

E. Safety Sampling Procedures.

1. Containers are usually opened and sampled in the designated sampling area. However, potential emergency situations may require a separate opening area.

2. Container sampling can be one of the most hazardous activities to worker safety and health because it often involves direct contact with unidentified materials.

3. General-Hazard Control Measures.

(a) Keep sampling personnel at a safe distance while drums are being opened. Sample only after opening operations are complete.

(b) Obtain samples with either glass rods or vacuum pumps. Do not use contaminated items such as discarded rags to sample. The contaminants may contaminate the sample and may not be compatible with container contents.

(c) Do not lean over containers to reach the

container being sampled, unless absolutely necessary.

(d) Never stand on drums. If necessary use mobile steps or another platform to achieve the height necessary to safely sample containers.

(e) Cover drum tops with plastic sheeting or other suitable non-contaminated materials to avoid excessive contact with the drum tops.

(f) Under no circumstances shall criminologist or other personnel use their sense of smell to identify hazardous materials.

F. Container Staging.

1. containers must sometimes be staged (moved in an organized manner to predesignated areas) to facilitate organization and accessibility of the hazardous materials and to protect the container from potentially hazardous scene conditions. Staging involves a trade-off between the increased hazards associated with movement and the decreased hazards associated with the enhanced organization and accessibility of the materials.

(a) Two staging areas are generally used for Clandestine Laboratory scenes:

* An initial staging area where containers are opened, sampled and resealed. Locate this area a safe distance from the dismantling area to prevent a chain

reaction in case of fire or explosion.

* A second staging area where containers are temporarily stored after sample and the hazard content is identified. Do not place unsealed containers with unknown contents in the second staging area, they may contain incompatible materials. Separate and segregate the containers based on the chemical group. The containers will remain in this area until transportation.

(b) Hazards in a staging area include, but are not limited to, minimal floor space, container damage, leaks and spills, incompatible wastes and potential fires and explosions.

(c) To control staging hazards, in all staging areas, stage the containers in rows, and space the rows to enable movement.

G. Disposal Containers.

1. Disposal containers are selected based on chemical compatibility and the quantity of material assessed for disposal.

(a) Water reactive materials and very small amounts of hazardous materials are placed in ten-gallon containers for storage and final disposal.

(b) Common practice is to use a 55-gallon drum

for hazardous material/waste storage and disposal.

2. The paper documentation that identifies and tracks the hazardous material/waste is dependent on the intent of the hazardous material destination.

   (a) If the hazardous material is to be used for the purpose of evidence, a Bill of Lading must accompany the hazardous material through the transportation process.

   (b) If the hazardous material is defined as a hazardous waste, a manifest must accompany the transportation of the hazardous waste. The destination of the hazardous waste is for direct disposal or destruction.

3. Containers that are used to haul hazardous materials/wastes must be properly marked.

   (a) A hazardous waste container must have a "Hazardous Waste" sticker on the container and, if applicable, a "Hazard Class Label".

   (b) A hazardous material container must have a "Hazard Class Label" on the container. The hazard class may be explosive, compressed gas, flammable and combustible liquid, flammable solid, oxidizer, organic peroxide, or corrosive material.

4. Small compatible containers may be over-packed, with a sufficient amount of absorbent material, in a large drum. A lab chemical packing list must

accompany all manifests referencing the specific wastes in the lab pack.

*REFERENCE NOTES FOR MODULE IV LESSON NO. 5

SITE CONTROL AND DECONTAMINATION

I. INTRODUCTION

A. Purpose.

The purpose of site control is to establish artificial and/or physical barriers isolating various hazards from potential "targets". Effective site control is designed to:

* Minimize potential contamination of workers.

* Minimize the unwanted movement of contaminants.

* Make known the individual site control requirements to all people working at the site.

Site Control is implemented by establishing:

- Work zones

- Decontamination procedures

- Safe work practices

B. Application to Law Enforcement.

Clandestine Laboratory sites are similar to uncontrolled waste sites or chemical emergency situations when related to the chemical and physical hazards involved. The

diversity of chemicals identified at a laboratory site, in containers of various conditions and quantities is substantially equivalent to many uncontrolled hazardous waste site situations. In addition, the various environmental factors (location, terrain, weather, population proximity) which may influence hazards at laboratory sites exert similar influences at uncontrolled waste sites. Therefore, general standard operating procedures for site control routinely used for uncontrolled waste sites and chemical emergencies may be adapted for Clandestine Laboratory work.

II. SITE CONTROL

A. Planning.

1. Variables affecting Site Control.

(a) Chemical Hazards - The toxicity, flammability and other characteristics of chemicals present at a site, will dictate the size of work areas, level of decontamination and other site control procedures.

(b) Site Characteristics - The location, size, physical layout and surrounding topography will influence the ability to isolate the site, size of work area, potential off-site hazard targets such as populations, environmental sensitized areas, physical requirements for site control and required work procedures.

(c) Work Activities - Extensive evidence collection, sample taking, inventorying and investigation may require additional law

enforcement officers and field time.

B. Implementation.

Establishing effective site control requires implementing a program adaptable to individual laboratory sites. Site control procedures routinely used for hazardous waste work may be modified for Clandestine Laboratory field activities.

1. Major components of Site Control:

(a) Site Map - A site map indicating work zones, equipment staging areas, location of specific hazards, chemical staging area, safety equipment and refuge location, decontamination area, emergency exits, and other related items clearly indicates site organization.

(b) Site Preparation - This activity may include initial isolation, ventilation, initial equipment, staging and other preliminary tasks.

(c) Work Zones - See below.

(d) Buddy System - The buddy system is a universally recognized safe work practice which should be required when wearing protective clothing, respiratory protection and or handling hazardous chemicals.

A buddy system promotes mutual assistance, continuous observation, equipment integrity

checks and an emergency communication system.

(e) Site Security - Unlike uncontrolled waste sites where vandalism or unauthorized access is a potential problem, Clandestine Laboratory sites are obviously properly secured. However, for prolonged or extensive investigations and/or clean ups, security may be desirable. site security may include assigned personnel, barriers, signs, fencing and a site personnel identification system.

(f) Communication System - Both internal and external communication systems are normally established as part of site control. External communication includes mobile telephones and radios. Internal communication between on-site personnel may include the use of radios, noise devices and hand signals for conveying safety information, instructions, changes in work underway and maintenance of site control. The use of personal protective equipment and enforced work zones normally preclude verbal communication and "walking back and forth" activities.

(g) Safe Work Practices - Standard operating procedures for safe work practices are implemented to maintain a strong safety awareness, reduce or prevent needless personnel exposure and maintain a minimum level of safety performance for all personnel at a site.

(h) Exposure Minimization - Minimize the number of personnel or equipment at the site or working in a given area. Prevent needless exposure to potential hazards by requiring the minimum amount of resources to complete the work safety.

III. WORK ZONES

A. Control Requirements.

Law enforcement activities at Clandestine Laboratory sites may contribute to the unwanted spread of chemical contamination to unaffected areas ("track-out"). Chemical contamination may move (migrate) by liquid run-off, vapor or gas dispersion, dust disturbance, equipment and personnel movement and surface to surface contact. The establishment and enforcement of work zones is one of the primary (and most effective) means of ensuring acceptable site control and minimizing unwanted contaminant movement.

Work zones define to field personnel, areas considered contaminated or safe, those requiring specific personal protective clothing and equipment, or implementation of safe work practices for specific operations of tasks. The effectiveness of the use of work zones controls the movement of personnel and equipment between zones and through designated access points.

B. Recommended Zones.

1. Exclusion Zone.

This zone incorporates all known and/or suspected

contaminated areas. The Exclusion Zone defines the work area for which site hazards are identified or suspected. Entry into this zone require the use of the highest level of protection required at the site. All personnel entering this zone must wear the prescribed level of protection specified and pass through the decontamination reduction corridor upon exit.

(a) Hotline - The hotline is the border between the Exclusion Zone and the Decontamination Reduction Zone. Any crossing of the hotline, regardless of the nature of duration of the task (or level of protection used requires full completion of the established decontamination procedure).

2. Contamination Reduction Zone.

This zone is a transition between contaminated and clean areas where decontamination is conducted. The zone provides a buffer between zones and designates adequate space (distance) to perform the established decontamination procedure. Because decontamination is considered, a systematic process of reducing contamination, adequate space (physical distance) is required to isolate each step in the process. The decontamination process starts upon crossing the hotline when exiting the Exclusion Zone.

(a) Contamination Control Line - This is the boundary between the Contamination Reduction and Support Zone. This line delineates the outer boundary of potential contamination.

3. Support Zone.

This zone defines all clean, uncontaminated areas surrounding the site. Use of protective clothing or equipment is not required, and the area is used for support functions (equipment staging, rests and meals, administrative tasks, etc.).

C. Other Consideration.

1. The concept of three concentric circles surrounding a site, delineating work zone is considered a recommended practice. Each laboratory site will present unique hazards and related control requirements. Small, low hazard, uncomplicated sites warrant simplified site control measures. In some cases, a step-off line (hot line) and simple decontamination procedure may be adequate. "Text book" application may be demanded by large, high hazards sites for which stringent site control is critical to officer safety.

2. Boundary Dimensions.

The size and shape of each zone is entirely dependent on the nature of the hazard presented at individual sites. Judgement in determining the size and shape of the zones is part of the overall hazard assessment process. Remember that personnel safety is the primary, but not exclusive priority in establishing site control (consider public and environmental health). Factors that should be considered in establishing initial

boundaries and periodically assessing their need for change include:

(a) Nature and extent of chemical hazards present.

(b) Physical and topographical features of the site.

(c) Potential for fire, explosion, chemical reaction, spill, release or other mishap.

(d) Weather conditions (especially wind conditions).

(e) Nature and extent of work activities.

(f) Nature and proximity of off-site targets (populated and environmentally sensitive areas).

(g) Size of contaminated area.

(NOTE: All boundaries should be considered dynamic in that a change in any one of the above listed factors may require or allow a change in the work zones).

IV. DECONTAMINATION.

A. Definition.

Decontamination is the process of reducing the level of contamination to a safe, negligible level. Decontamination does not guarantee absolute removal of a contaminant. Proper decontamination is critical to

minimize the transfer of harmful materials into clean areas.

B. Planning.

Decontamination may be needed only seconds after beginning work at a site. The need to exit the Exclusion Zone is unpredictable, therefore, decontamination procedures, supplies and equipment must be established BEFORE work begins. To satisfy this requirement, the need for decontamination at a specific Clandestine Laboratory site must be anticipated prior to beginning work.

1. Considerations - The type and extent of decontamination specified at a site depends on the following:

   (a) The toxicity/physical properties of contaminant present.

   (b) The nature of work activities.

   (c) The level of personal protective clothing and equipment required.

   (d) The effectiveness of various procedures for identified contaminants.

   (e) Anticipated use.

2. Decontamination Plan - This plan should be dynamic, adapting to changing site requirements and address the following:

(a) Number and layout of decontamination stations.

(b) Supplies and equipment required.

(c) Appropriate methods to be used.

(d) Procedure to prevent cross contamination or track-out.

(e) Waste disposal procedure.

C. Contamination Process.

Chemical contaminants, in the form of gases, vapors, liquids or particulates, may migrate by a variety of mechanisms. Air dispersion, run-off, surface to surface contact and carry out may move contaminants. Gases, vapors, liquids and particulates contacting the outer surface of chemical protective clothing may rest on, react with, or permeate into the surface of the material. Contact time, chemical concentration, temperature, contaminant molecular size, material properties and physical state of the contaminant affect protective clothing permeation.

D. Prevention of Contamination.

A thorough and extensive decontamination procedure is not a substitute for allowing poor work practices. A false sense of security regarding the ability of the procedure to "correct" extensive contamination must be avoided. Every effort must be made by all field personnel to avoid contamination during all work activities.

1. Methods - Standard operating procedures used to prevent contamination include:

   (a) Deliberate, coordinated and planned actions.

   (b) Avoid rushing or short cuts.

   (c) Avoid needless exposures, stay upwind, plan sampling activities.

   (d) Avoid unnecessary movement of containers.

   (e) Protect monitoring instruments and equipment (wrap in plastic).

   (f) Avoid puddles or touching contaminated surfaces.

   (g) Wear disposable garments.

   (h) Isolate sources of potential contamination (isolate leaking containers, cap containers, rope off specific areas, etc.).

   (i) Follow all protective equipment dress-out procedures, (NO SHORT CUTS).

   (j) Inspect protective equipment integrity frequently.

E. Decontamination Methods.

1. General - Decontamination methods include physical removal, inactivation (neutralization) or a combination of both.

(a) Physical Removal - This method involves the dislodging, displacement, rinsing, wiping off or evaporation of contaminants. Physical removal can be very easy to follow and very effective. Use of disposable outer protective booties, suits and even gloves provide an automatic method for physical removal when these items are removed and disposed of as waste.

(b) Chemical Removal - Contaminants may be detoxified or mobilized for physical removal (dissolved). Detoxification usually involves neutralization. Mobilization usually involves changing the physical state, properties or immediate environment of the contaminant to facilitate easier removal.

2. Selection - The type of decontamination method used is primarily dependent on the chemical properties of the contaminants and the contaminated material~~, on surface~~. The method selected should be easy to implement in the field with readily available material.

3. Limitations - The effectiveness of a decontamination procedure is limited by the selection of methods for removal and the care taken by each individual while following the process. Even carefully followed procedures may not be completely adequate in reducing the level of chemical contamination. The user must be prepared to dispose of any item which cannot be safely decontaminated.

4. Recommended Methods - The U.S. E.P.A. has recommended separate decontamination procedures based on each of the three categories of levels of protection (A, B, and C). However, any field decontamination method implemented must:

   (a) Isolate the worker during the procedure.

   (b) Provide clearly designated areas for each task or group of tasks to be performed.

   (c) Provide immediate containment of all discarded items (tape, disposable suits, etc.).

   (d) Contain all run-off or waste streams associated with the process.

   (e) Be field practical and organized in a logical sequence of steps so as to prevent cross contamination.

*REFERENCE NOTES FOR MODULE IV LESSON NO. 6

SITE EMERGENCIES

I. INTRODUCTION

A. Characterization.

Any hazard at a Clandestine Laboratory site can precipitate an emergency. In addition to chemical emergencies and physical accidents, medical emergencies may also occur, through no interaction with site hazards. An emergency may be characterized as:

* Unplanned - little or no warning.

* Unpredictable - varied interaction with environmental factors.

* Potentially complex - single events may trigger development of additional, interacting events.

* Harmful - some emergencies have the potential to cause harm, and therefore, may require immediate response. Other situations may result in immediate harm.

The nature and description of emergencies that may arise during field activities is infinitely numerous. However, possible events can be placed into one of two basic categories - chemical emergencies and medical emergencies (with some overlap). The standard operating procedures for each category of events are slightly different but the basic goals and objectives for incident resolution are identical.

B. Goals/Objectives.

All emergency situations require decisive action. The decisions made during a situation may have far-reaching, long term consequences. Incorrect or delayed action may have catastrophic results. In general, actions and decisions during an emergency should be based on the following priorities:

* Protection of personnel health and safety.

* Protection of public safety.

* Protection of the environment.

* Protection of property.

II. PREPARATION.

A. Planning.

Because decisions (and actions) must be made quickly during an emergency, and such decisions may have significant far reaching consequences, site personnel must be prepared to respond. Preparation for response includes the following basic steps which are normally the responsibility of the Safety Officer:

1. Identification and assessment of site hazards.

2. Identification of potential emergencies which may arise.

3. Development of basic procedures generally adaptable to identify potential emergencies.

4. Identification and securing of resources needed to respond to potential emergencies.

5. Organization of personnel and resources so as to be in a proactive mode in the event of an emergency (stage safety equipment, identify agents "in charge", etc.).

6. Preparation of personnel (training, communication of site hazards and standard operating procedures, etc.).

B. Contingency Plan.

A basic Contingency Plan should be developed which is generally applicable to all Clandestine Laboratory sites which defines and communicates the standing procedures to be followed in case of an emergency.

Contingency Plans are part of the Operations Plan and must be documented on the HARP form. It should incorporate the following items:

1. Personnel - Identification, authority, responsibility and function of each person on-site.

2. Site Characterization - Hazards and potential emergencies associated with the site and the site description.

3. Planned Responses - Emergency procedures, standby safety equipment, communication, notification, access to additional resources.

C. Anticipated Events.

1. Chemical Emergencies.

(a) Types.

* Fire
* Explosion
* Chemical reaction
* Leak or spill
* Airborne emission
* Booby Trap

(b) Results.

* Bodily harm - Burns and physical injury caused when trying to evacuate.

* Chemical exposure - Inhalation and absorption.

* Environmental contamination - Soil, water and air contamination.

2. Medical Emergencies.

(a) Types

* Assault
* Heart attack, stroke
* Heat stress
* Sever injury

(b) Results

* Life threatening situation (impairment or death possible)
* Bodily harm

D. Training.

All personnel should receive initial and periodic training in the following areas related to site emergency response:

1. Hazard Recognition.
2. Standard and emergency operating procedures
3. Communication methods and emergency signaling.
4. Emergency chain-of-command.
5. How to call for help.
6. Evacuation routes and regroup areas.
7. Emergency equipment use.
8. First aid and CPR.
9. Access and use of off-site support.
10. Awareness (chemical, physical and law enforcement hazard awareness).

E. Emergency Medical Care Provisions.

Provision for emergency medical care and treatment of field personnel for possible exposures to toxic substances and injuries resulting from accidents or physical hazards must be established prior to beginning work and documented on the HARP form. The following items should be included in emergency care provisions:

1. Name, address, route and telephone number of the nearest medical treatment facility or procedure for securing field response of emergency medical personnel. This information should be available

on the HARP form and (posted) at the site.

2. The facility's ability to provide care and treatment of personnel exposed or suspected of being exposed to toxic (or otherwise hazardous). If the facility lacks toxicological capability, arrangements should be made for consultant services.

3. Administrative arrangements for accepting patients.

4. Emergency showers, eye wash fountains, and first aid equipment readily available on-site. Personnel should have first aid and medical emergency training.

5. Provisions for the rapid identification of substances resulting in exposure. This information must be given to medical personnel.

6. Procedures for decontamination of injured workers and preventing contamination of medical personnel, equipment, and facilities.

III. FIELD ACTIONS.

A. Site and Work Preparation.

As soon as possible after arriving at the site and/or securing the laboratory site, the following action should be completed.

1. Assess hazards and re-evaluate anticipated potential emergencies.

2. Stage safety equipment in an upwind, visible and easily accessible location.

3. Establish evacuation routes and regroup areas. Mark locations when applicable.

4. If not already complete, specify access to local emergency medical system.

5. Organize field personnel and review the following:

   (a) Work zones.
   (b) Decontamination procedure.
   (c) Task priorities and assignments.
   (d) Protective clothing and equipment requirements.
   (e) Safe Work practices applicable to the site.
   (f) Identify any potential hazards at the site.
   (g) Emergency procedures.

      * Emergency chain-of-command.

      * Evacuation routes and regroup areas.

      * Emergency signals.

      * Emergency medical support access.

      * Location of safety standby equipment.

B. Emergency Response Procedures.

1. General.

(a) Notification.

* Alert personnel.

* Stop work activities.

* Notify Site Safety Officer and Officer in Charge.

  - What.

  - Where.

  - Whom.

  - When.

  - Extent of situation (severity, size, etc.).

  - What aid/response is needed.

(b) Initial Emergency Assessment.

* Nature of incident.

  - Type and cause of incident.

  - Extent of release, damage or exposure.

* Harm caused.

  - Casualties - victims, condition, treatment required.

- Exposure - actual or potential, off-site, etc.

* Immediate threats.

  - What else can happen.

  - Hazard interaction.

  - Medical Aid.

* Action required.

  - Rescue and medical aid.

  - Evacuation.

  - Immediate mitigation measures.

  - Off-site notification and request for resources/aid.

(c) Immediate Emergency Action.

* Rescue and first aid.

* Evacuation.

* Hazard Mitigation.

(d) Secondary Emergency Assessment and Plan of Action.

* Review and prioritize hazards.

* Review and prioritize tasks.

* Assess resources and compare to hazards and tasks.

* Identify needed additional resources.

* Plan action.

* Begin incident containment and reduction.

(e) Continue to re-assess situation.

(f) Follow up.

* What went wrong? Why?

* How to avoid in the future.

* Adjust standard operating procedures.

* Document incident.

2. Chemical Emergencies.

(a) Basic Priorities.

* Mitigation - stop the event.

- Chemical spill - close valve or cap, upright container, plug holes, set in larger container, etc.

- Fire or reaction - separate materials, suppress environment.

- Expanding containers, potential explosions - isolate area, lower container temperatures, remotely vent, etc.

* Containment - Prevent additional spread, propagation or damage.

  - Chemical spill - dike, berm or absorb. Isolate to prevent track out, move upwind.

  - Fire or reaction - isolate from other materials, suppress environment, contain run-off.

  - Expanding containers, potential explosives - isolate, vent containers, stabilize or detonate explosives.

* Clean up - isolate into "packages" and remove from site.

  - Chemical spill - drum absorbed liquid.

  - Fire or reaction - vacuum or drum contaminated run-off or reacted materials.

  - Expanding containers and

* Inhalation.

  - Remove to fresh air.

  - Maintain air way.

  - Give oxygen if available and permissible.

* Chemical splash.

  - Remove contaminated clothing.

  - Flush skin with copious amounts of water for fifteen minutes.

  - Treat for shock.

  - Cover with sterile dressing.

* Eye injuries.

  - Foreign body - attempt to flush, patch both eyes.

  - Chemical splash - flush for fifteen minutes, patch both eyes.

(c) Reporting.

* All exposures must be reported to the Safety Officer at the time of occurrence regardless of insignificance.

- Some exposures could result in delayed effects.

- Some exposure may not be recognized by the affected person. Use of a buddy system promotes mutual "status" checks.

C. Evacuation.

1. Guidelines.

(a) Evacuation signals, routes and re-group areas, must be established before work begins.

* Evacuation or other emergencies can be signaled by:

- Two way radio communication with all scene personnel.

- Three consecutive blasts using a portable air horn.

(b) Careful judgement should be exercised in signaling and evacuation. Frequently the process of exiting an area may result in a more significant exposure than if movement were minimized.

(c) Evacuation routes should proceed upwind and preferably through the Contamination Reduction zone.

(d) Re-group areas should be located upwind.

(e) Plan two evacuations when possible (primary and secondary) and mark them.

(f) Consider the mobility restrictions of personnel wearing protective clothing and equipment when planning routes.

(g) At large sites, consider establishing safe refuge areas.

2. Safe Distance Determination.

No single recommendation can be given for a safe evacuation distance because of the numerous, site specific variables requiring consideration. Factors that should be considered when determining a safe distance includes:

(a) Toxicological, chemical and physical properties of the chemical.

(b) Quantity, rate and method of release.

(c) Atmospheric conditions.

(d) Local topography.

D. Leadership during an Emergency.

Proper action, team work, leadership and effectiveness during an emergency can be compromised due to the inherent stresses associated with an incident. The following remarks may be valuable to field personnel in

developing an effective personal approach to performance under pressure:

1. If you are not in good physical and mental condition, you will be unable to help others.

2. The ability to think critically and make logical decisions is improved if emotional responses to an emergency are separated from cognitive realizations.

3. If you remain calm, others are more likely to remain calm.

4. Employee confidence in your authority and actions will improve their performance in following your directions. Confidence is partly fostered by honesty, purposeful action, sharing of information, and attitude.

5. Anticipate employee and personal stress (physical and mental).

6. Mentally rehearse your actions in the event of an emergency.

7. Hazardous situations require critical thinking and judgement.

8. Anticipate mixed employee response (mental attitude and insubordination) during an emergency.

9. Do not ask an employee to do a task you are not willing to perform.

*REFERENCE NOTES FOR MODULE V

MODULE V

RESPIRATORY AND FIELD MONITORING EQUIPMENT TRAINING

INTRODUCTION

LESSON NO. 1 - Self Contained Breathing Apparatus.

LESSON NO. 2 - Air Purifying Respirator.

LESSON NO. 3 - Field Monitoring.

TRAINING

INTRODUCTION

Training is only as effective as the knowledge and skills that are retained by the trainee. The safe use of respiratory protective equipment is greatly dependent upon this knowledge and skill. Therefore, it is imperative that the user becomes proficient in its proper use before an imminent hazard requires its use. The information provided in this section will make the user aware of the primary components, limitations and operation of the basic types of respiratory protective equipment.

Lesson No. 1 - Self Contained Breathing Apparatus (SCBA)

Lesson No. 2 - Air Purifying Respirator (APR)

Lesson No. 3 - Field Monitoring Equipment

*RESOURCE NOTEBOOK MODULE V LESSON NO. 1

SELF CONTAINED BREATHING APPARATUS

I. INTRODUCTION.

There will be many situations where the use of a Self Contained Breathing Apparatus, or SCBA, will be required. The initial evaluation of a lab that had been in operation is an example. A SCBA can be a complex piece of equipment to the unprepared user.

A. Air Source.

1. Portable compressed air cylinder.

B. Components.

1. Backpack.
2. Air bottle.
3. Regulator.
4. Air hose.
5. Full face mask.

C. Modes.

1. Continuous.
2. Demand.
3. Positive pressure demand.

D. Types.

1. Closed circuit.

   (a) Re-breathe exhaled air after being filtered and supplemented with oxygen.

(b) Mining applications.

(c) Use duration up to four hours.

2. Open Circuit.

(a) Exhale air to the atmosphere.

(b) conventional SCBA application.

(c) Use duration up to one hour.

* A sixty minute bottle will last approximately forty-five minutes.

E. Advantages.

1. Portable.
2. Effective in rescue situations.
3. Control over air supply.
4. User mobility.
5. No airline to tend or contaminate.
6. No set up.

F. Disadvantages.

1. Heavy and bulky for the user.
2. Additional stress on the user.
3. Limited work periods.
4. Not good for small work areas or confined openings.

II. USE OF THE SCBA

The SCBA selected for use by some law enforcement agencies is the Mine Safety Appliances Ultra Lite. There are features about this particular unit that make it unique when compared to other SCBA's.

A. Features of the Ultra Lite.

1. Facepiece Assembly - Molded from soft rubber compound. Ultravue facepiece has a one-piece polycarbonate lens that is replaceable, five adjustable headbands, speaking diaphragm and exhalation valve. Three sizes are available.

2. Regulator - Reduces high pressure air from cylinder to breathable pressure and controls the flow of air to facepiece. Pressure demand regulator maintains positive pressure in the facepiece during both inhalation and exhalation.

3. Audi-Larm Warning Alarm - Sounds a continuous low pressure warning at approximately five-hundred and forty (540) psi for about six minutes when equipped with a rated thirty-minute two-thousand two-hundred and sixteen (2,216) psig cylinder.

4. Cylinders - These cylinders have a capacity of forty-five (45) cubic feet of air and a rated service life of thirty minutes.

5. Harness - The harness has a padded strap at each shoulder across the bottom of the backplate, and a chest strap. Backplate is made of aluminum. Cylinder is held in position by ratchet-type latch.

B. Respirator Approvals by NIOSH.

The ULTRA-LITE is approved by NIOSH but this approval can be violated by the users.

1. Fittings - There are specific fittings that are used on the MSA ULTRA-LITE. Do not replace them or any other part with non-approved parts.

2. Air Bottles - Air bottles made by any other manufacturer must never be used with the ULTRA-LITE.

C. Pre-Inspection.

1. Mask - Lens, mask, seal, straps, breathing tube coupler and valves clean, in good condition and functional.

2. Breathing Tube - Tube and fittings clean and in good condition, stretch hose to inspect for punctures or tears.

3. Cylinder - Pressure gauges indicate a full bottle ("20" or greater on gauge). Cylinder outlet and threading are clean and in good condition.

4. Backpack - Bottle harness and straps are clean and in good condition. Open all straps, check buckles.

5. High Pressure Hose and Regulator - Clean and in good condition, "O" ring present and in good condition on high pressure hose to cylinder fitting.

6. Conduct a high pressure leak test - Test the entire system under high pressure for leaks and test the low pressure alarm.

D. Air Cylinder Refilling

Air cylinders must be refilled properly in order to avoid any adverse consequences. Air cylinders for SCBAs are normally refilled by either a specially approved air compressor or a cascade system.

1. Any air compressor utilized to refill an SCBA air cylinder must meet strict guidelines set down by OSHA. As a minimum, it must provide Grade "D" breathing air.

2. A cascade system must utilize cylinders that have been filled with a minimum of Grade "D" breathing air. An approved system must be used and the person doing the filling must be properly trained. Most often an outside service approved by management is utilized.

E. Post-Inspection.

The inspection schedule recommended by the manufacturer should in most cases be the minimum standard used. Monthly inspections are required by OSHA. The inspection tag must be signed, dated and stored with the SCBA. It is highly recommended that the case be sealed with a thin plastic "tie-wrap". This will ensure the user that the unit has been inspected and is ready for use.

*RESOURCE NOTEBOOK MODULE V LESSON NO. 2

AIR PURIFYING RESPIRATOR (APR)

I. INTRODUCTION.

There are specific situations where a cartridge respirator gas mask might be required to be worn. The dismantling of an illicit drug lab is an example. An APR must be worn and set up properly to be effective.

This section will identify the general knowledge and skills needed to use these respirators safely.

II. GUIDELINES.

As with any other piece of safety equipment, there are general guidelines for proper use of an air purifying respirator.

A. Applications.

An APR would be used when there are toxic chemicals in the air and the level is within the capacity of the cartridges.

B. Selection.

The selection of respiratory protective equipment is made by the Site Safety Officer. These decisions should be based upon the chemical hazards present and information in the Chemical Reference Manual.

C. Restrictions.

The following applications are examples of when the use of an APR is not allowable:

1. Oxygen in the air is less than 19.5%.

2. Level of toxic chemicals in the air exceed the rated capacity of the canister or cartridge.

3. For chemicals not approved by the manufacturer.

4. Fire fighting.

III. SAFE WORK PRACTICES.

It is the responsibility of the Site Safety Officer to ensure that all law enforcement related personnel follow safe work practices. There are specific guidelines to be followed when using an APR.

A. Pre-Enforcement Preparation.

Each gas mask should be inspected and placed into a sealed bag. the seal assures the user that the gas mask is functioning properly and is sanitized.

B. Buddy System.

The buddy system previously described should also be used when gas masks are utilized.

IV. THE ULTRA-TWIN RESPIRATOR.

One type of (APR) discussed here as an example is the Ultra-Twin, a full-face cartridge respirator manufactured by Mine Safety Appliances. It was designed to protect the user from specific chemicals.

A. Mask.

The mask is a full face design. It has a speaking diaphragm which will allow the user to be heard while speaking when the mask is being worn. Protective plastic covers are available which will protect the lens from scratching. The mask is designed to prevent fogging inside the lens. There are three different sizes available.

B. Harness.

The Ultra-Twin facepiece utilizes a five-point strap harness. This should provide the user with a good mask-to-face seal.

C. Cartridges.

Several types of cartridges and filters are available. Each are specific to certain groups of chemicals. Care must be taken to select the proper cartridge.

D. Carrier Bag.

A plastic carrier bag is supplied with each Ultra-Twin. the mask should be sanitized after each use and stored inside the bag after each use.

E. Operation.

1. Inspection.

(a) Respirator is clean and in a sealed bag.

(b) Lens, seal and straps are in good condition.

(c) Valves are in place, clean and functioning.

(d) Cartridge threading is in good condition.

F. Maintenance.

The facepiece should be cleaned, disinfected and inspected according to the manufacturer's specifications.

V. THE MCU-2/P PROTECTIVE MASK:

Another example is the MCU-2P Protective Mask. A gas mask manufactured by Mine Safety Appliances. It was designed for use by the military during warfare situations. The manufacturer has given assurance that the canister will filter out any airborne contaminant that would be encountered in an illicit drug lab.

A. Mask.

The mask is a full face design. It has speaking diaphragms which will allow the user to be heard while speaking when the mask is being worn. Protective outserts are available to cover the lens and prevent scratching. The mask is designed to inhibit fogging inside the lens.

B. Harness.

The MCU-2/P utilizes a six strap harness system. This should provide the wearer with a good mask-to-face seal.

C. Canister.

The canister screws onto the left side of the mask. There is only one type available. It is intended to be all-purpose in its application. The canister should be functional for most applications in a Clandestine Drug Laboratory.

D. Carrier Bag.

A carrier bag is supplied with each gas mask. The mask (sanitized) and a new canister should be stored inside the bag after each use.

E. Operation.

1. Inspection.

(a) Respirator is clean and in a sealed bag.

(b) Lens, seal and straps are in good condition.

(c) Valves are in place, clean and functioning.

(d) Drinking tube is in place and the one-way valve is functioning.

(e) Cartridge threading is in good condition.

F. Maintenance.

The facepiece should be cleaned, disinfected, and inspected according to the manufacturer's specifications after returning from the field.

*RESOURCE NOTEBOOK MODULE V LESSON NO. 3

FIELD MONITORING

I. INTRODUCTION.

Each illicit drug lab will have to be evaluated for chemical hazards before it can be dismantled. This will require the use of a combustible gas indicator (CGI), a direct reading indicator and Tube system.

A. Gastech 1314.

The Gastech 1314 is one example of a combustible gas indicator. It will measure the level of combustible gases or vapors in the air on a scale of 0-100% of the Lower Explosive Limit (LEL). The LEL is actually the "leanest" level that can possibly be ignited. OSHA standards call for work to be done at well below the LEL. The 1315 can also measure volatile organic vapors and gases on a part per million scale (1000 times more sensitive than the LEL scale). Additionally, the percent of oxygen in the air can also be measured.

B. Controls and Indicators.

1. Controls - The six controls used in normal operation of the instrument are arranged on the left side of the instrument. These controls are recessed to minimize the possibility of accidental operation.

2. Warning Indicators - Alarm lights, red and amber, illuminate when the corresponding section of instrument is in alarm condition. A solid-state

electronic buzzer, mounted at the rear of the instrument, gives a pulsed tone on detection of gas or oxygen deficiency, and a continuous tone in case of excess oxygen or a malfunction, either low battery voltage or downscale drift of the meter.

II. DRAGGER DETECTOR TUBE SYSTEM.

Dragger tubes also known as indicator tubes, are an example of a direct reading indicator tube system. They are not accurate. Instead, they are intended to provide an "indication" of what chemical and how much of the chemical contaminant is present in the air. When used properly, they can be a useful tool.

A. Operation.

1. Read the instructions contained in the detector tube box. Pay particular attention to the list of chemicals under, "Specifically, (cross-sensitivity)." These chemicals can interfere with the reading if they are also present.

2. The instructions for each type of tube will explain how to "read" the tube. Look for the particular color change. Try to determine as best you can, where the color change stops and record the reading.

3. Detector tubes must only be interpreted exactly according to the instructions provided with each box.

APPENDICES

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Billing Code 4410-01-M

UNITED STATES DEPARTMENT OF JUSTICE

Attorney General

Procedures Governing the Destruction
of Contraband Drug Evidence in the
Custody of Federal Law Enforcement Authorities

AGENCY: Department of Justice

ACTION: Final Rule

SUMMARY: This final rule amends 28 CFR, Part 50, by adding a new section, Section 50.21, establishing the drug destruction policy of the Department of Justice for the timely destruction of unnecessary seized contraband drugs. This final rule is intended to prevent the warehousing of large quantities of seized contraband drugs which are unnecessary for due process in criminal cases. Such stockpiling of contraband drugs presents inordinate security and storage problems which create additional economic burdens on limited law enforcement resources of the United States. It is necessary since the retention of controlled substances and the continuing acquisition of additional amounts pose increased storage problems. The procedures established herein will permit destruction of unnecessary seized controlled substances, and provide for the retaining of an amount that will be sufficient for evidentiary purpose.

1. The authority citation for Part 50 is amended to read as follows:

AUTHORITY: 28 U.S.C. 508, 509, 510; 516, 517, 518, 519; 5 U.S.C. 301, 552, 552a, 15 U.S.C. 16(d), E.O. 11247; 3 CFR (1964-65 Comp.) 348, 21 U.S.C. 881(f)(2).

2. Part 50 is amended by adding a new section 50.21 to read as follows:

§ 50.21 - PROCEDURES GOVERNING THE DESTRUCTION OF CONTRABAND DRUG EVIDENCE IN THE CUSTODY OF FEDERAL LAW ENFORCEMENT AUTHORITIES

(a) General. The procedures set forth below are intended as a statement of policy of the Department of Justice and will be applied by the Department in exercising its responsibilities under federal law relating to the destruction of seized contraband drugs.

(b) Purpose. This policy implements the authority of the Attorney General under Title I, Section 1006(c)(3) of the Anti-Drug Abuse Act of 1986, Pub. L. No. 99-570 which is codified at 21 U.S.C. 881(f)(2), to direct the destruction, as necessary, of Schedule I and II contraband substances.

(c) Policy. This regulation is intended to prevent

the warehousing of large quantities of seized contraband drugs which are unnecessary for due process in criminal cases. Such stockpiling of contraband drugs presents inordinate security and storage problems which create additional economic burdens on limited law enforcement resources of the United States.

(d) Definitions. As used in this subpart, the following terms shall have the meanings specified:

(1) The term "Contraband drugs" are those controlled substances listed in Schedules I and II of the Controlled Substances Act seized for violation of that Act.

(2) The term "Marijuana" is as defined in 21 U.S.C. 801(15) but does not include, for the purposes of this regulation, the derivatives hashish or hashish oil for purposes of destruction.

(3) The term "Representative sample" means the exemplar for testing and a sample aggregate portion of the whole amount seized sufficient for current criminal evidentiary practice.

(4) The term "Threshold amount" means:

(i) Two kilograms of a mixture or substance containing a detectable amount of heroin;

(ii) Ten kilograms of a mixture or substance containing a detectable amount of—

(A) Coca leaves, except coca leaves and extracts of coca leaves from which cocaine, ecgonine, and derivatives of ecognine or their salts have been removed;

(B) Cocaine, its salts, optical and geometric isomers, and salts of isomers;

(C) Ecgonine, its derivatives, their salts, isomers, and salts of isomers; or

(D) Any compound, mixture, or preparation which contains any quantity of any of the substances referred to in subclauses (A) through (C);

(iii) Ten kilograms of a mixture or substance described in clause (B) which contains cocaine base;

(iv) Two hundred grams of phencyclidine (PCP) or two kilograms of a mixture or substance containing a detectable amount of phencyclidine (PCP);

(v) Twenty grams of a mixture or substance containing a detectable amount of Lysergic Acid Diethylamide (LSD);

(vi) Eight hundred grams of a mixture or substance containing a detectable amount of N-phenyl-N[1-(2-phenylethyl)-4-piperidinyl] propanamide [commonly known as fentanyl] or two hundred grams of a mixture or substance containing a detectable amount of any analogue of N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl] propanamide; or

(vii) Twenty kilograms of hashish or two kilograms of hashish oil [21 U.S.C. 841(b)(1)(D), 960(b)(4)];

In the event of any changes to Section 401(b)(1) of the Controlled Substances Act (21 U.S.C. 841(b)(1)) as amended occurring after the date of these regulations, the threshold amount of any substance therein listed, except marijuana, shall be twice the minimum amount required for the most severe mandatory minimum sentence.

(e) Procedures: Responsibilities of the Federal Bureau of Investigation and Drug Enforcement Administration.

When contraband drug substances in excess of the threshold amount or in the case of marijuana a quantity in excess of the representative sample are seized pursuant to a criminal investigation and retained in the custody of the Federal Bureau of Investigation or Drug Enforcement Administration, the Agency having custody shall:

(1) Immediately notify the appropriate United States Attorney, Assistant United States Attorney, or the responsible state/local prosecutor that the amount of seized contraband drug exceeding the threshold amount and its packaging, will be destroyed after sixty days from the date notice is provided of the seizures, unless the agency providing notice is requested in writing by the authority receiving notice not to destroy the excess contraband drug; and

(2) Assure that appropriate tests of samples of the drug are conducted to determine the chemical nature of the contraband substance and its weight sufficient to serve as evidence before the trial courts of that jurisdiction; and

(3) Photographically depict, and if requested by the appropriate prosecutorial authority, videotape, the contraband drugs as originally packaged or an appropriate display of the seized contraband drugs so as to create evidentiary exhibits for use at trial; and

(4) Isolate and retain the appropriate threshold amounts of contraband drug evidence when an amount greater than the appropriate threshold amount has been seized, or when less than the appropriate threshold amounts of contraband drugs have been seized, the entire amount of the seizure, with the exception of marijuana, for which a representative sample shall be retained; and

(5) Maintain the retained portions of the contraband drugs until the evidence is no longer required for legal proceedings, at which time it may be destroyed, first having obtained consent of the United States Attorney, an Assistant United States Attorney, or the responsible state/local prosecutor;

(6) Notify the appropriate United States Attorney, Assistant United States Attorney, or the responsible state/local prosecutor to obtain consent to destroy the retained amount or representative sample whenever the related suspect(s) has been a fugitive from justice for a period of five years. An exemplar sufficient for testing will be retained consistent with this section.

(f) Procedures: Responsibilities of the United States Attorney or the District Attorney (or equivalent state/local prosecutorial authority). When so notified by the Federal

Bureau of Investigation or the Drug Enforcement Administration of an intent to destroy excess contraband drugs, the United States Attorney or the District Attorney (or equivalent) may:

(1) Agree to the destruction of the contraband drug evidence in excess of the threshold amount, or for marijuana in excess of the representative sample, prior to the normal sixty-day period. The United States Attorney, or the District Attorney (or equivalent) may delegate to his/her assistants authority to enter into such agreement; or

(2) Request an exception to the destruction policy in writing to the Special Agent in Charge of the responsible division prior to the end of the sixty-day period when retaining only the threshold amount or representative sample will significantly affect any legal proceedings; and

(3) In the event of a denial of the request may appeal the denial to the Assistant Attorney General, Criminal Division. Such authority may not be redelegated. An appeal shall stay the destruction until the appeal is complete.

(g) Supplementary Regulations. The Federal Bureau of Investigation and the Drug Enforcement Administration are

authorized to issue regulations and establish procedures consistent with this section.

Date: 18 February 1988

Edwin Meese III

EDWIN MEESE III

ATTORNEY GENERAL

CLANDESTINE LABORATORY (HARP)

HAZARDOUS APPRAISAL & RECOGNITION PLAN

(To be Completed By Designated Safety Officer)

Date: _____

Prepared by: _____ Case No.: _____

Type of Structure _____
(i.e., Residential, Commercial, Business)

Address: _____

Nearest Emergency Room Phone: _____

Location: _____

Waste Disposal Company: _____

Address: _____ Phone #: _____

Estimated Hours On-Site: [ ] 0-2 [ ] 2-4 [ ] 4-8 [ ] 8

TYPE OF LABORATORY

[ ] P-2-P [ ] PCP [ ] METHAQUALONE

[ ] METHAMPHETAMINE

[ ] HYDROGENATION - THIONYL CHLORIDE

[ ] HYDRIODIC ACID

[ ] OTHER: _____

Does investigation require employee or site exposure monitoring?

[ ] Yes [ ] No TYPE: _____

INVESTIGATION TEAM

	NAME	RESPONSIBILITY (i.e., site-safety officer, entry team, appraisal/evidence recovery team, etc.)		NAME	RESPONSIBILITY (i.e., site-safety officer, entry team, appraisal/evidence recovery team, etc.)
1.			7.		
2.			8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

POTENTIAL HAZARDS (RISK)

[ ] Carcinogens
[ ] Confined Spaces
[ ] Corrosives
[ ] Dusts
[ ] Flammables
[ ] Heat Stress (Expected Temperature)
[ ] Inorganic Gases
[ ] Metals
[ ] Noise (Source)
[ ] Other Airborne Contaminants
[ ] Oxidizers
[ ] Solvents

REQUIRED PERSONAL PROTECTIVE EQUIPMENT AVAILABLE

GLOVE(S):

[ ] Neoprene [ ] Nitrile [ ] PVC
[ ] Rubber [ ] Viton [ ] Liners

SUIT:

[ ] Tyvek [ ] Saranex [ ] PE Tyvek [ ] PVC

RESPIRATOR:

[ ] A/P Cartridge_____ [ ] SCBA

[ ] Hardhat
[ ] Escape Respirator
[ ] Hearing Protection
[ ] Eye Protection
[ ] Chemical Resistant Boots
[ ] Boot Covers
[ ] Other_____

REQUIRED DECONTAMINATION MATERIALS NEEDED FOR OPERATION

Shower/Eye Wash	[ ] Yes	[ ] No
Washing Facilities	[ ] Yes	[ ] No
Drinking Water	[ ] Yes	[ ] No
First Aid Kit	[ ] Yes	[ ] No
Spill Kit	[ ] Yes	[ ] NO

Additional comments:_____