

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines Updated on 9-4-01

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Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part I Emergency Response Plan

(a) Purpose:

The purpose of this plan is to provide the Cochise County Hazardous Materials Response Team (CCHMRT) with an organized plan to mitigate an emergency involving hazardous materials within Cochise County. (For the purpose of this document, the terms hazardous materials and hazardous substances are used synonymously and intended to encompass any product or chemical as defined in regulations or posing risk to life, property or the environment).

(b) Objective:

It is the objective of this plan to provide the CCHMRT personnel and managers as well as other agencies with a standardized plan of action in the event of a hazardous materials incident requiring the intervention and activation of the CCHMRT. It is directed to ensure proper and professional actions by all involved agencies.

(c) Intent:

It is the intent of this plan to enhance existing systems and provide a consistent level of hazardous materials response capability throughout Cochise County. This plan should compliment existing plans and is not intended to supplant or usurp existing emergency response plans of any agency. This plan is intended to comply with the minimum requirement of Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(q)(1) for the CCHMRT. This plan along with the CCHMRT Standard Operating Guidelines (SOG's) and the Site Specific Safety Plan are intended to comply with all the elements of OSHA 29 CFR 1910.120(q)(2). The CCHMRT will develop a Site Specific Safety Plan as defined in the CCHMRT SOG's on every hazardous materials incident response.

(d) Authority:

The CCHMRT will respond to any hazardous materials emergency under the direction of the Cochise County Emergency Services Coordinator. All requests for the CCHMRT must be made through the Cochise County Emergency Services Coordinator. The CCHMRT will operate within a unified command system with the requesting agency to take or cause to take such actions as maybe necessary to safely mitigate, remove or abate the effects of a hazardous materials release or threat of release. The activation of the CCHMRT in no way releases the requesting jurisdiction of its role/responsibility in the mitigation of a hazardous materials release.

(e) Definition:

The CCHMRT is an organized group of hazardous materials technician level trained response personnel, designated by the participating organization, operating under an emergency response plan and Standard Operating Guidelines who are expected to perform work to handle and control or otherwise minimize or eliminate the hazards to people, property or the environment from an actual or potential leak or spill of hazardous substances requiring possible close approach to the substance.

The CCHMRT will not operate in an offensive mode without a sufficient number of technician trained personnel available at the scene and until all mandatory staff positions are fulfilled (Incident Commander, Entry Team, Backup Team, Safety Officer and Decontamination Supervisor). It is recognized that additional qualified personnel may be needed to support this minimum number.

(e) Roles and Responsibilities:

The CCHMRT Role in response to a hazardous materials incident is one of confinement and containment, with incident priorities of life safety, incident stabilization, property conservation and environmental protection. The jurisdiction receiving services from the CCHMRT will be responsive to the technical input and ensure personnel safety in accordance with CCHMRT SOG's. CCHMRT members have the authority to terminate any strategy or tactic considered unsafe and notify the Incident Commander. In the absence of a functional IMS and IC, the CCHMRT will notify the requesting agency that the senior CCHMRT member will be assuming IC. The CCHMRT will respond with equipment, personnel and be able to perform:

- Hazard and risk assessment
- Provide technical information and guidance
- Provide various levels of Personal Protective Equipment (PPE)
- Public protective actions
- Decontamination requirements
- Site Safety recommendations
- Resource considerations
- Control zones
- Monitoring requirements
- Incident Documentation
- Plug and patching containers
- Assist in product transfer
- Assist in over-packing of drums and similar containers
- Direction of defensive actions
- Diking, confinement and redirection of hazardous materials
- Neutralization Guidelines
- Vapor dispersion and or suppression

CCHMRT will maintain written SOG's for the various tasks they may perform.

CCHMRT will maintain all appropriate documents. The CCHMRT often relies on an off

duty personnel response. It is imperative that the requesting agency contacts the Cochise County Emergency Services Coordinator at the first sign of a hazardous materials emergency to ensure a rapid response as possible. As stated earlier in this document, the activation of the CCHMRT does not in anyway relieve the requesting agency of their responsibility. Items that may be requested by the CCHMRT from the requesting agency include but are not limited to:

- Water Supply
- Medical treatment and transport
- Pre and Post medical monitoring
- Traffic control
- Rehabilitation supplies
- Sanitary Facilities
- First Responder Operations personnel (if available) to assist in decontamination operations.

Once the emergency has been stabilized and the threat to life safety has been concluded, the CCHMRT will release the site to the responsible agency. CCHMRT assumes no responsibility in the cleanup of materials. Oversight of cleanup operations will be handled by the appropriate agency unless there is a specific reason for the team to remain involved. The CCHMRT will not enter into contracts, or make commitments to contractors for the cleanup of the incident site.

(f) Levels of response:

CCHMRT will utilize a uniform classification for categorizing hazardous materials incidents. The three categories below define the classifications.

Level I:

Severity of Incident: MINOR- A spill, release or potential release of a known hazardous substance. No deaths, if injuries, minor in nature.

Extent of Incident: Limited to initial area of involvement and unlikely that it will spread. For example, a single structure or area of 300 feet or less.

Type of material involved: Identified hazardous substance that is not radioactive, water reactive or hypergolic. Generally a flammable or combustible liquid could also include limited amounts of corrosives.

Amount of material involved: A limited amount of hazardous substance or small container. Quantity would generally be less than 55 gallons.

Population Affected: Evacuation will be limited to the immediate area that can be evacuated in a short period of time for a limited duration (evacuation duration nor to exceed four hours). A limited populace will be affected.

Resources: Local resources can handle, includes mutual aid agreements exclusive of the CCHMRT.

Level II:

Severity of incident: MODERATE- A spill, release or potential release of a known or unknown hazardous substance. No deaths, if injuries can be minor to severe.

Extent of incident: Release may not be controllable without special resources. Limited to several blocks or buildings.

Type of Material involved: Unknown hazardous substances or substance that is toxic, reactive, flammable, radioactive, corrosive or biological. This type of material does not include intentional release or suspected intentional release of biological, nuclear, incendiary, chemical or explosive substances or devices.

Amount of Material involved: An amount limited by size of the container and release from it. For example: a small leak from a tanker that is controlled would be a Level II where a complete failure would be a Level III.

Population Affected: Evacuation will be confined to a designated area that local resources can achieve, extended sheltering is not required.

Resources: Local response agencies may need assistance from outside resources.

LEVEL III:

Severity of Incident: SEVERE- A spill, release or potential release of a hazardous substance with an associated fire, explosion or toxic/corrosive cloud. Injuries or death may already have occurred.

Extent of Incident: Large area may be impacted possibly impacting essential community services. Extensive environmental contamination is possible.

Type of material involved: Unknown hazardous substance, or hazardous substance capable of producing a toxic/corrosive gas cloud, is highly reactive or unstable, is a flammable gas or produces flammable vapors, is radioactive or is chemical/biological weapon.

Amount of Material involved: Large amount of a hazardous substance or a limited amount of very hazardous substance.

Population Affected: Presents an immediate danger to the public or operating personnel. Evacuation will require movement of large numbers or populace and/or extending over areas that will have a significant impact on the community. It may require activation of shelters for evacuees.

Resources: Local response agencies will need assistance from outside resources.

All levels may involve evacuation from a very limited to large scale over considerable periods of time.

(f) Support Responders:

A list of support responders will be maintained with contact numbers by the CCHMRT. Support responders will be requested through the IC.

(g) Chain of Command

All requesting agencies will utilize the Incident Management System (IMS). CCHMRT suggests that the first responders to a hazardous materials emergency initiate the IMS and begin defensive operations in accordance with their level of certification. The first actions taken at an incident will set the stage for success or failure. When contacting the

Cochise County Emergency Services Coordinator, it is vital that the requesting agency communicates all pertinent information. CCHMRT may use the information given to begin research operations while enroute to the scene. After the CCHMRT has arrived within the requesting agencies jurisdiction, an attempt to contact the requesting agency utilizing the Cochise County Mutual Aid frequency will be made. CCHMRT will utilize the call designation Haz-Mat 1. CCHMRT will then request the location of the Command Post and information on how to approach upwind/uphill. Information on the estimated time of arrival (ETA) will then be given. Upon the arrival of the CCHMRT a briefing will occur between the IC and the Haz-Mat Team Leader. These two staff positions will then utilize a unified command structure. The CCHMRT leader will assume responsibility for tasks associated with the CCHMRT. As stated earlier in this document, if an IMS is not in place upon the arrival of the CCHMRT, the Team Leader will assume command.

(h) Training:

All members of the CCHMRT have completed as a minimum curriculum in compliance with OSHA 29 CFR 1910.120(q)(6). All CCHMRT members will be certified competent by his/her employer and possess documentation of certification. In addition to the certificates of competency that are maintained by the employer for each team member, the employer maintains records of initial and refresher training as required by OSHA 29 CFR 1910.120(q)(6). CCHMRT members will also complete an annual competency evaluation certifying them competent in the various operations of the team.

(n) Review and Evaluation:

The CCHMRT will critique all responses of the Team. This critique is to evaluate the response actions of the involved personnel. This critique is in addition to any critique held by the requesting jurisdiction and is not intended to relieve the IC of the need to conduct a critique and subsequent follow-up reports. The CCHMRT will document critique outcomes and forward recommendations to the team coordinator.

This Emergency Response Plan will be reviewed at least annually for effectiveness and regulatory compliance. This plan must be consistent with the Arizona Division of Emergency Management Plan and the National Contingency Plan for oil and Hazardous Substance Releases.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part II Initial Response

(a) General

CCHMRT will generally utilize two main groups of personnel at the scene of hazardous materials emergency. The first group will be First Responder Operations personnel as classified by OSHA 29 CFR 1910.120(q)(6)(ii). These responders may be employees of the Fry Fire District or personnel from the requesting agency. The second group of responders will be certified Hazardous Materials Technicians as classified by OSHA 29 CFR 1910.120(q)(6)(iii). Other individuals with expertise in a specific area may be requested to assist the CCHMRT if deemed necessary. These individuals may be chemist, specialist, contractors, industrial hygienist or industrial employees.

The overall success of the hazardous materials incident will depend largely on the initial operations performed by the first response agency. These first responders are often placed in the position of arriving at the scene of a hazardous materials release with little or no information about the product(s) and are lacking the proper personnel protective equipment to operate near the release.

(b) Actions

With responder safety in mind, the following items should be considered as a minimum for a safe and effective response.

Approach the incident from an uphill and upwind position if possible. Uphill positioning is preferable when winds are variable.

Position all vehicles far enough away from the release to allow for a safe retreat if necessary (300 feet minimum if dealing with an unknown product). This may include facing the vehicles away from the scene. Never unhook the trailer from its tow vehicle!

Avoid contact with the product being released. Remember that many hazardous materials are colorless, odorless vapors.

Make sure that the initial size up includes the type of situation found and proper response routes for incoming units.

Consider all drums, containers, cylinders and tanks as being full and the materials in them to be hazardous materials, until proven otherwise.

Establish an initial isolation zone based on the information in the NAERG (North American Emergency Response Guide). Insure that all people who do not have the proper PPE (police, fire, civilian and EMS) are removed from the initial isolation zone.

An Area of Safe Refuge (ASR) should be designated inside the initial isolation zone for people who are considered contaminated. These people should not be brought out of the ASR until they can be decontaminated with at least emergency decontamination. Runoff is not a primary issue in this circumstance; life safety is of utmost importance.

From a safe distance, attempt to identify the product (placards, labels, UN#'s, chemical names, etc.), the type and size of the container, amount of product being released, and the name of the shipper or manufacture.

Act quickly and decisively to request additional resources and technical assistance. These units can be cancelled easily if they are not needed.

Immediate rescue of victims should only be attempted when the rescuers are able to operate in the proper PPE and all RISK/BENEFIT considerations have been addressed and a scene assessment has been completed.

Operational level personnel should only complete operation of remote shut off valves with assistance and direction from plant or facilities personnel unless the operations level personnel are completely familiar with the facility and understand the results of operating the valve.

(c) Scene Management:

The first responder, operational level unit that arrives first on the scene should insure that the IMS is initiated and a personnel accountability system is utilized.

All first responders should remember that quick, aggressive action has no place at the hazardous materials incident. Many times, no action may be the only safe action due to the lack of PPE. First responders should address the strategic goals of recognition, isolation, protection and notification. These are all strategies that can be addressed while operating in the “defensive mode”. Spill control is also an initial strategy that may be considered, but must be accomplished without coming in contact with the product or its vapors. The exception to this is when dealing with certain flammable liquids and flammable gases, which are considered firefighter operations and should be dealt with aggressively and offensively while wearing proper protective equipment and having completed the proper training.

Upon arrival of the CCHMRT, the Team Leader (senior officer) should insure that the hazardous materials response vehicle is located in the proper place to facilitate the work of the team. Keep in mind that this does not need to be in close proximity of the command post.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part III Incident Management

(a) General

Both the OSHA 29 CFR 1910.120 and the Environmental Protection Agency (EPA) 40 CFR 311; state: The senior emergency response official responding to a chemical emergency shall become the individual in charge of the site specific Incident Management System. This means that all hazardous materials responders must operate using an Incident Management System (IMS).

(b) Incident Management System:

The IMS organizational structure develops in a modular fashion from the top down at any incident; the specific IMS organizational structure for a hazardous materials emergency is based on the incident needs. The Incident Commander and the Incident Safety Officer are always appointed. If other positions of responsibility are not appointed, the Incident Commander assumes those duties.

The senior officer on the first arriving Fire unit shall establish Command of the incident. A Personnel Accountability System and appropriate incident worksheets, if available, should be utilized.

If the first arriving unit(s) is staffed with Hazardous Materials Technician personnel they shall be utilized in defensive operations only. Offensive actions will be carried out only after the required staff positions have been filled.

(b) Hazardous Materials ICS Module:

The IMS Hazardous Materials module is utilized when the Incident Commander deems the need for the management of tactical objectives related to a hazardous materials incident. Only the module components necessary to execute tactical objectives should be implemented. The following is a description of the Hazardous Materials module.

Hazardous Materials Incident Commander/Team Leader:

- The IC has the authority and responsibility to ensure the health and safety of personnel and the public throughout a hazardous materials incident.
- Works in correlation with the first response Incident Commander.
- Directs the overall operations of the CCHMRT.
- Request additional resources.
- Implements the hazardous materials emergency response plan.
- Conducts briefings as needed to ensure adequate communication between all sectors.
- Should be the senior officer and may or may not be a technician.

Hazardous Materials Safety Officer:

- Reports to the Incident Commander.
- Has the authority to stop or prevent unsafe acts.
- Position required by OSHA 29 CFR 1910.120(q)(3)(vii)
- Coordinates safety related activities.
- checklist of activities:
 - 1) Checks in and obtains briefing from IC and other staffed positions.
 - 2) Implements the Site Specific Safety Plan.
 - 3) Insures the safety of CCHMRT members from physical, environmental and chemical exposures.
 - 4) Coordinates with Medical Sector and Research Sector.

Entry Team Leader:

- Reports to Hazardous Materials Incident Commander.
- Responsible for tactical operations within the hot zone.
- Directs rescue operations within the hot zone.
- Training to the technician level, at a minimum.
- Maintains communication with Support Sector.
- Carries out actions to mitigate hazardous materials release or threatened release.
- Coordinates operations with Research Sector.

Decontamination Team Leader:

- Reports to IC.
- Responsible for operations of personnel in contamination reduction zone.
- Provides decontamination as required.
- Hazardous materials technician level trained
- Checklist of activities:
 - 1) Obtains briefing from the IC.
 - 2) Establishes contamination reduction corridor.
 - 3) Identifies contaminated people and equipment.
 - 4) Supervises the operation of the decontamination crew.
 - 5) Maintains control of movement of people and equipment within the Warm Zone
 - 6) Coordinates operations with the Entry Leader.
 - 7) Coordinates the transfer of patients requiring medical evaluation to the medical sector.

Support/Medical Sector:

- Coordinates with the Safety Officer.
- Record entry times and advises of five minute checks.
- Records times personnel “started on air” utilizing SCBA.
- Oversees work mission duration and rehab cycles.
- Oversees Pre and Post medical evaluations.
- Initiates medical care in the event of an injury and coordinates patient transport.
- Keeps all finance records and tracks equipment.
- Keep all work sheets and any forms pertaining to the incident.

Research Sector:

- Reports to the IC and Safety Officer.
- Utilizes at least three separate reference materials to research and document all pertinent information about the product. (hazards, chemical properties, exposure treatment, signs/symptoms of exposure, reactivity, neutralization methods, decontamination methods, etc.)
- Works with technical specialist and serves as liaison between command and outside technical advisors.
- Utilizes computer modeling to predict potential course and harm of the product.
- Conducts weather readings and documents weather changes throughout the incident using weather station checklist found in appendices.
- Participates in briefings and communicates product information to the IC, Safety Officer, Support/Medical Sector, Entry Leader and Decontamination Team Leader.

(c) Medical Staffing:

An EMS transport unit should be on scene of any hazardous materials emergency involving offensive operations. This unit should have at a minimum one EMT-B and one EMT-P.

These personnel will fall under the Support/Medical Sector of the ICS module.

(d) Pre Entry Evaluations:

Conducted prior to entry in Level A or B chemical protective clothing. Shall include blood pressure (BP), pulses rate (PR), respiratory rate (RR) and oral temperature (OT). Members shall consume 8-16 oz. of water prior to entry. See Exclusion Criteria Sheet in the appendices for vital sign limits. The Pre Entry Evaluation will be documented on the Pre Entry form found in the appendices.

(e) Post Entry Evaluations:

Repeat Pre Entry assessment immediately after and ten minutes after entry. Repeat forced hydration of at least 8-oz. water.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part IV Establishing Work Zones

(a) General

It is imperative that control zones be established as early in the incident as possible. The first responder should establish control zones, if possible. The first responder shall use available detection equipment, the Department of Transportation North American Emergency Response Guidebook (NAERG), and their own best judgment in determining the initial isolation zone. When determining initial isolation zones, responders should determine the greatest protection for the public and the responders. The CCHMRT can decrease the size of the initial isolation area as needed.

Hazardous materials incident zoning is a dynamic process. Members of the hazardous materials team, command and control personnel and others need to be aware of and anticipate the possibility of zoning changes based on incident progress.

(b) Purpose:

- The purpose of establishing control zones is to:
 - 1) Designate areas of specific function
 - 2) Limit levels of contamination
 - 3) Provide areas of safety for responders and customers

- The size and shape of the control zones are determined by the following factors:
 - 1) Chemical properties
 - 2) Natural barriers
 - 3) Quantity of product involved and the amount of the product leaking
 - 4) Size and condition of the container
 - 5) Physical state of the product
 - 6) Weather
 - 7) Recognized standards and information of reference materials
 - 8) Levels of product vapors as determined by air monitoring devices

(c) Terminology:

- **Hot Zone**
 - 1) The Hot Zone is the area most affected by the hazardous materials release, area of safe refuge for contaminated victims and beginning of the contamination reduction corridor.

- 2) When available, the use of Threshold Limit Values (TLV) will be used to determine the boundaries of the hot zone.
- 3) The hot zone will be distinguished utilizing banner tape, cones, or some other recognizable material.
- 4) The area of safe refuge should be located near the entrance to the contamination reduction corridor and will be monitored to assure that further contamination of victims is not occurring. Contaminated victims shall be retained in the area of safe refuge while awaiting access to the contamination reduction corridor.
- 5) General Hot Zone Guidelines:
 - a) *Toxicity*- The hot zone shall be established based on air monitor readings greater than the published TLV/TWA or PEL exposures values. Any reading falling within these limits shall be considered to be within the hot zone.
 - b) *Flammability*- Any reading on a combustible gas indicator shall be considered to be within the hot zone.
 - c) *Oxygen*- Oxygen deficient atmospheres are those with readings of 19.5% oxygen or less and oxygen enriched atmospheres are those with reading of 23.5% or greater. When evaluating oxygen deficient atmospheres, consider that the available oxygen may be influenced by the contaminants present. Any area containing an oxygen enriched or deficient atmosphere shall be considered to be within the hot zone.
 - d) *Radioactivity*- Any reading above background level will confirm the existence of a radiation hazard and shall be considered to be within the hot zone.

- **Warm Zone or Contamination Reduction Zone:**

- 1) The warm zone is an area safe from contamination from the ongoing hazardous material release. The warm zone will be distinguished utilizing banner tape, cones or some other recognizable material.
- 2) Cross-contamination, from exposed victims and responders, is possible in this area and all personnel entering the Warm Zone shall wear an appropriate level of chemical protective clothing.
- 3) The Warm Zone includes the contamination reduction corridor and a safety buffer around the Hot Zone to prevent the contamination of victims and responders that are not equipped with chemical protective clothing.
- 4) The Warm Zone shall contain access control points for the Hot Zone.

- **Cold Zone:**

- 1) The Cold Zone is an area outside the Warm Zone that is within the incident perimeter and is contamination free.
- 2) The Cold Zone will be distinguished by utilizing banner tape, cones or some other Recognizable material.
- 3) The Cold Zone is an area will command and control functions occur as well as other functions necessary to support the activities occurring in the Hot Zone and Warm Zone.
- 4) The Cold Zone is the functional area that treatment of decontaminated victims, interagency coordination and incident security can be expected to occur.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part V Identification and Confirmation

(a) General:

One of the primary objectives during a hazardous materials incident is the identification of the materials and hazards presented by the materials involved and subsequent confirmation of the properties and hazards of these materials.

(b) Policy:

On Level II and III incidents, at least one Hazardous Materials Technician shall be assigned to research the chemical(s) involved. The member(s) assigned to research sector will record all physical properties, incompatibilities, recommend PPE, first aid and antidotal information, decontamination guidelines and any other information that is relevant.

Items to be considered in the identification process should include, but is not limited to:

- Placards and labels
- Shipping papers and MSDS sheets
- Waybills and train consist
- Packaging names and information
- Type and shape of container
- Markings, colors, tag number, shippers name, truck or railcar number etc.

At least three sources shall be researched for each chemical involved. This should include books, databases, Chemtrec, etc.

Conflicting information shall be interpreted by assuming that the worst case scenario is present, highest or lowest extremes, highest toxicity or reactivity, etc.

The NAERG is a good first responder's guide but may be a poor reference because of its generality. The ERG is only designed as a guideline for the first thirty minutes of an incident.

During rail responses the CCHMRT will make all attempts to locate the train's crew and conductor. They should have access to the following items:

- Special instructions list and the STCC number for each hazardous material on the train and relative position of car from the engine.

- The Train Consist is a chart that displays the relative order of each car on the train, starting with the engine. Hazardous materials will be identified with the word **DANGEROUS** beneath the car.
- It will indicate emergency handling precautions for each hazardous material on the train.
- Cars containing explosives or poison are identified by the symbol “A”.
- Waybills are shipping papers that provide emergency phone numbers, addresses, and description of materials.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part VI Decontamination

(a) General:

Decontamination is an extremely important process of removing contaminants, which have accumulated on personnel and equipment. Decontamination is vital to the health and safety of the public and of all emergency response personnel.

(b) Policy

Decontamination shall be performed at all hazardous materials incidents where there is a threat of cross contamination. The method and type of decontamination will vary, depending on the type of product(s), the physical and chemical properties and the level of contamination. Any and all of the following methods can be utilized to accomplish decontamination.

- Dilution
- Absorption
- Emulsification
- Neutralization
- Chemical Degradation
- Separation
- Negative or positive pressure
- Dry Disposal

All personnel, apparatus and equipment entering the hot zone or coming in contact with contaminated run off or materials should be considered contaminated and must be systematically decontaminated. The names and agencies involved will be recorded by the IC in the final report and kept on file.

A decontamination plan shall be in place prior to anyone entering the hot zone.

All decontamination personnel shall wear the level of PPE as determined in the Site Specific Safety Plan.

A Hazardous Material Technician shall be assigned as the Decon Supervisor and will consult with the IC to determine a suitable area for decontamination. An adequate water supply will be obtained. Properly trained and protected operational level personnel may be utilized to perform decontamination under the direction of the Decon Supervisor.

The area designated as the decontamination area will be appropriately marked as well as defined.

Prevention of contamination shall be the primary objective. This can be accomplished by:

- Minimizing contact with the hazardous substances
- Protecting instruments, radios, etc., by bagging or wrapping in plastic when possible.
- Using remote sampling, proper handling techniques, and devices.
- Wearing disposable chemical protective clothing when possible or permissible.
- Protecting and wearing SCBA.

All run off from the decontamination process shall be contained and held for final disposal by the applicable cleanup contractor. Any protective clothing or equipment that is still suspected of being contaminated, will be isolated and placed in sealed bags or drums until final decontamination or disposal can be accomplished or further technical assistance can be obtained. Decontamination of heavy equipment and vehicles may require pressure or steam cleaners and special retention arrangements. Any turnout gear or clothing, which may be sent to a commercial laundry or cleaned by an outside vendor, must be accompanied by information about the product or chemical and handling precautions including MSDS sheets if applicable.

All personnel involved in the decontamination process shall undergo decontamination. The Support Sector will keep accurate records of all personnel going through or involved physically in the decontamination process. The level of PPE worn and the product involved will be included in the final report.

Personnel that may need medical attention should be emergency decontaminated before exiting the hot zone. Decontamination of victims is an urgent priority. It must be remembered that victims contaminated by hazardous materials actually become patients after they have been decontaminated and responders must wear proper PPE.

Considerations include.

- Contamination of transport vehicles and treatment facilities must be prevented.
- Prepare transport units with plastic and or enclose victims in body bags with proper precautions.
- Establish a civilian decontamination process at hospital facility if contaminated victims may migrate to emergency room on their own.
- Remove and double bag victims clothing and effects if they are suspected of being contaminated.
- Communicate with the medical facility early with the following information:
 - 1) Number of victims
 - 2) Medical condition
 - 3) Time of arrival
 - 4) When to expect contaminated victims that may migrate to the hospital.
 - 5) Information on Haz Mat material if known.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part VII Monitoring Protocols and Procedures

(a) General

CCHMRT will utilize an assortment of instruments, devices and techniques to accomplish the following:

- Identify and quantify airborne contaminants, vapors, gases, liquid solids, and hazardous conditions.
- Determine the level of worker protection needed for entry and support personnel.
- Assist in defining perimeters, hazards, and work zones.
- Identify need for medical, toxicological, decontamination, evacuation and risk assessment actions of strategies.
- Track changes, verify remediation efforts, record monitoring chronology.

(b) Policy

Regulatory compliance will be ensured during all monitoring and sampling activities. Monitoring and sampling will be carried out in compliance with OSHA CFR 1910.120, 40 CFR Part 311 and NFPA 471, and other applicable standards.

(c) Record Keeping

All monitoring devices, colorimetric tubes and reagents will be maintained as per the manufacturer's recommendations. Inherent safety approvals and inspections will be maintained when applicable. Relative response curves and coefficients, as well as cross sensitivity charts will be kept available to entrants when applicable. Permanent, detailed records of instrument repairs and usage history will be kept on file.

(d) Initial Entry

Upon initial entry, monitor for Immediately Dangerous to Life and Health (IDLH) conditions and exposures above the permissible limits (PELs) or other published exposure levels. Approach from up-wind, up-grade positions when possible. Wear appropriate PPE when initially entering an area for the purpose of obtaining instrument readings. The minimum level of protection for a reconnaissance operation will be level B. Instrument readings will determine proper level of PPE for continued assessment or mitigation. Personnel will use the "buddy system".

(c) Monitoring for Unknowns

Monitoring for unknown products will include the following, in order:

- pH with hydrated pH paper for corrosive vapors (may be done in conjunction with radiation monitoring)

- Ionizing radiation
- Combustibility/Flammability/Explosivity
- Oxygen content
- Toxicity
- Hydrogen Sulfide (if location dictates)
- Carbon Monoxide (if situation warrants)
- Specific gasses (colormetric tubes)

(d) Monitoring suspected/known products

- Instrument/colormetric tube (appropriate for suspected product)
- Oxygen content

(e) Sampling protocol

When air monitoring does not indicate product identification or level of hazard, it may become necessary to perform chemical analysis on the product(s) to determine its identity or hazards. When chemical analysis is indicated, the following sampling protocols will be implemented:

- Continuous air monitoring
- Buddy system
- Decontamination Plan in place
- Sampling techniques and equipment that promotes low personnel contamination (drum thieves, ladles, pipettes, etc.)
- Sealed, non-leaking containers will not be opened by CCHMRT members. **Note:** sealed, non-leaking drums, or unlabelled containers will be secured in a manner to insure public safety and the responsible agency(s) will be notified. Opening unknown containers poses a significant risk to personnel and should only be performed under extreme conditions. The opening of sealed containers mandates the following considerations:
 - 1) Test closure with peroxide test paper.
 - 2) Visually inspect container for signs of stress (bulging, weakened areas, cracks, crystals, etc.)
 - 3) Maximum level of chemical and flash protection
 - 4) **NOTE:** If peroxide test is positive or container shows signs of or stress crystalline formations appear around openings **DO NOT PROCEED ANY FURTHER** and consider the product unstable. **REQUEST A BOMB SQUAD TO RESPOND.**

(f) Exposure limits and action levels

OSHA, NIOSH, and EPA have all set exposure guidelines and limits. Many times the safe value for the same chemicals or hazards are different. With the highest regard for the health and safety of responders and the public, the CCHMRT will use the most conservative values listed for a toxic substance.

- Combustible Gas Indicator (CGI)

Known product > 50% L.E.L-explosion hazard, indicates IDLH condition

Unknown product > 25% L.E.L-explosion hazard, indicates IDLH condition

Confined space > 10% L.E.L-explosion hazard, indicates IDLH condition

(g) Exposure limits and action levels (cont)

- Oxygen concentration

< 10%-16% most Combustible Gas Indicators will not function properly

< 19.5% Monitor wearing SCBA

23.5% Fire potential for confined space

25% Fire potential, consult specialist

- Radiation survey

< 1mR/hr continue monitoring, record time and consult a specialist

> 1mR/hr withdraw and isolate

- Toxicity

Colorimetric tubes and Photoionization detectors are dependent on product or chemical, consult reference manuals for toxicity data.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part VIII Entry Team Briefings

(a) Policy

Prior to making entry into a hot zone for the purpose of incident stabilization, the following steps shall be completed:

- Tactical plan
- Site-specific safety plan
- Decontamination plan
- Pre-entry briefing
- Back-up team(s) prepared and ready
- Appropriate chemical clothing selected and verified

(b) Entry Team

An Entry Team is any crew that performs stabilization, rescue or any other action within the perimeter of the Hot Zone. Entry teams shall be comprised of at least two members and shall have at least one back up team (2 members) dressed and staged in the cold zone.

(c) Backup Team

A Backup Team is any crew that exists to support the entry team should they encounter difficulties or require rescue. Backup Teams shall be comprised of at least two members trained as technicians. Backup Teams may be employed as the relief crew for an entry team at the end of their work cycle at the discretion of the IC. If the Backup Team is deployed for any reason, a new Backup Team shall be dressed and briefed to deploy as soon as possible. A Backup Team is equal to the number of persons on the Entry Team.

(d) Pre-Entry Briefing

The following entry briefing shall be conducted prior to any entry being made into the Hot Zone:

- Product identification
- Action plan objectives of the work cycle
- Atmospheric monitoring guidelines
- Communication review (radio and hand signals)
- Decontamination guidelines and location of the contamination reduction corridor
- Emergency evacuation signals and areas of safe refuge
- Pre-entry hydration and medical considerations
- Estimated work cycle duration
- Other site specific information

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part IX Product and Recovery and Disposal

(a) Policy

On Level II and III incidents, it shall be the policy of the CCHMRT to contain or secure hazardous materials only to the extent that there is no longer an immediate threat to life, property or the environment outside of the emergency site.

As soon as possible, representatives from the appropriate Federal, State and or local agencies should be summoned to the scene in order to coordinate and oversee recovery and disposal activities. Such representatives may or may not be on scene, but must be made aware of the situation. Such agencies may include, but are not limited to:

- Cochise County Emergency Services
- Arizona Department of Public Safety
- Arizona Division of Emergency Management
- Arizona Department of Environmental Quality
- United States Coast Guard
- Arizona Department of Health
- Arizona Department of Transportation
- Arizona Game and Fish Department
- EPA
- OSHA
- Drug Enforcement Agency
- Federal Bureau of Investigation
- Local Law Enforcement Agencies

Once the product has been secured/stabilized, the responsible party should be allowed reasonable time to secure an acceptable private contractor for the removal and disposal of the product. In some instances, the scene may be turned over to such a contractor with the approval of any of the applicable above-mentioned regulatory agency(ies).

All private contractors shall meet guidelines as set forth in OSHA 29 CFR 1910.120 and shall utilize appropriate PPE and follow all safety guidelines as deemed necessary by the Incident Commander and Safety Officer. If a contractor resists working within the above PPE and safety guidelines, that contractor's activity shall be terminated until compliance is achieved or another contractor can be procured.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part X Post Incident Guidelines

(a) Policy

All incidents that require the stabilization, cleanup, mitigation, or handling of any hazardous substances will require post incident guidelines that include, but may not be limited to, debriefing, cost recovery, post incident analysis, and after action reports. These activities fall under the two basic categories of recovery and termination.

(b) Recovery

Recovery incorporates activities such as the releasing of mutual aid and locally supplied, but not now needed, units at the scene; the replenishment of equipment and supplies; and considerations given to cleanup operations. The release of the CCHMRT, should take place as soon as possible after the stabilization or elimination of the situation that brought about the emergency. Once the threat to the public, the responders, and the environment outside the emergency site has been eliminated, then and only then, should the CCHMRT begin the recovery phase.

All equipment and supplies used on the scene should be accounted for, documented, and placed back in service or listed for cost recovery as outlined in this SOG. Keep in mind that man hours and apparatus mileage will also be included in these recovery activities.

(c) Termination

Termination includes documenting information relative to personnel, units, and/or incident operations; and evaluation reports and activities. A debriefing of all on scene personnel should be accomplished before departure from the scene whenever possible. Information that should be gathered during the debriefing includes; who responded to the incident, what they did, when they did it, to what extent were they successful or unsuccessful, who suffered what injuries, and what treatments were provided. The accuracy and effectiveness of the Site Specific Safety Plan should also be evaluated.

To meet the OSHA Hazard Communications regulations, and the “Right To Know” laws, a complete list of all substances encountered, symptoms of exposure, specific treatments, and any workers exposed of contaminated must be established. Every responder at the scene must be provided the following:

- Name(s) of substances involved in the incident
- Exact symptoms of exposure to each substance
- Specific action to be taken for decontamination

Termination (cont)

A timeline for the incident should be developed and recorded with the activities of all units at the scene, and any unusual occurrences that took place during the incident. As required by OSHA 29 CFR 1910.120 (q), all hazardous materials incidents requiring the response of one or more CCHMRT members will have a Post Incident Analysis (PIA) conducted as soon as possible after the incident. The purpose of the PIA is to address the activities of the incident in a positive manner, with honest input to help identify the things that worked and those that didn't work. A record of the PIA should be kept and included in the after action report.

After analyzing the information generated during the debriefing and the PIA, the findings should be summarized into a document known as the After Action Report. Recording information about exposures and treatments, in medical records and any other document, must be done with confidentiality in mind.

Any SOG updates, procedural changes, and training needs identified during the review of the After Action Report should be forwarded to the team coordinator.

The tedious and time consuming task of recovery and termination is often given a much lower priority than most incident activities, but must be completed with the idea that accurate incident documentation will be the only way to help recall the incident and learn from it in years to come.

Cochise County/Fry Fire Hazardous Materials Response Team

Standard Operating Guidelines, Part XI Personal Protective Equipment Personal Protective Equipment Program

This SOG is intended to provide guidance for CCHMRT Technician/Specialist in selecting PPE during a hazardous materials incident. It will serve as a tool in the day to day needs of the hazmat team member. It will also serve to fulfill the requirements dictated in Hazardous Waste Operations and Emergency Response OSHA 29 CFR 1910.120 paragraph (g), (5) (Personal Protective Equipment Program).

I. **Selection** of Chemical Protective Clothing utilized by CCHMRT shall be based upon product hazards and use requirements.

A. Protective Ensembles will consist of a respiratory protection device, chemical protective garment, head protection, handwear and footwear.

1. Respiratory Protection Devices

- a) CCHMRT utilizes MSA Positive Pressure Self Contained Breathing Apparatus
- b) The breathing apparatus shall use either a 30-minute or a 60-minute bottle. Any entry into a hazardous environment by a hazmat **entry team** will utilize a 60-minute bottle. Exceptions to this policy might include initial examination by personnel into a hazard area wearing Level D Protection (Structural Firefighting Protective Clothing (SFPC) with 30-minute SCBA) or a confined space operation. Any time the entry team members utilize a less-than-60 minute SCBA, the IC will approve the decision.
- c) An option of using Air Purifying Respirators (APR) does exist, however, the criteria for utilizing this type of protection is very stringent. APR masks will **never** be used when the product is an unknown. Initial entry teams will **never** utilize APR masks. In-depth research on the chemical and the filters must be thoroughly documented before use. Air monitoring will be initiated prior to and during all use of APR masks to ensure adequate oxygen levels and that an IDLH atmosphere is present. Use of APR masks in general hazmat operations will **not** be considered.
- d) All hazmat team personnel will be fit tested on an annual basis IAW OSHA 29 CFR 1910.134 Respiratory Protection.

2. Chemical Protective Clothing

Chemical Protective Clothing utilized by CCHMRT shall adhere to the following levels and types.

- a) **Level D Protection** shall consist of SFPC and SCBA, Fire resistant pants and shirt or a Fire resistant jump suit.
- b) **Level C Protection** shall consist of chemical splash or dust particulate resistant clothing providing full body coverage with respiratory protection.
- c) **Level B Protection** shall consist of chemical splash resistant clothing providing full body coverage and a positive pressure SCBA. Level B is separated into Type I, II, and III design garments. The CCHMRT Fire utilizes Type I and II only.
 - 1) **Type I:** Level B Type I garments are designed to completely cover the wearer **and** the SCBA. The SCBA will be worn on the inside of the suit. Level B Type I garments are only splash resistant, in that they will have **non-gas** tight seams, zippers and will lack exhaust valves.
 - 2) **Type II:** Level B Type II garments are of a hooded design and allow for the SCBA to be worn on the **outside** of the garment. Garments designed for Level B Type II may also be worn with an APR as a Level C protection.
- D) **Level A Protection** shall consist of gastight/vapor protective, chemical resistant clothing providing full body coverage and a positive pressure SCBA. Level A garments are separated into Type I, II and III. The CCHMRT only utilizes Type I Level A.
 - 1) **Type I:** Level A Type I garments are designed to completely cover the wearer and their SCBA. Level A Type I garments are gastight, in that they will have a gas tight zipper and exhaust valves. Type I garments shall be the default garment for any Level A operations. Level A garments will be of front entry design.

3. Head Protection

- a) Head protection shall be worn any time there is a potential for injury to the head area IAW OSHA 29 CFR 1910.133. It is suggested that hard hats always be worn in Level A garments. A towel can be taped to the front of the helmet. This allows the wearer to slightly tilt his in a downward position and use his hands to clean the inside of the face shield when fog accumulates.

4. Handwear

- a) Hand protection shall be worn whenever chemical protection is utilized.
- b) A minimum of 2 pair chemical protective gloves shall be worn with each chemical ensemble.

- c) Other layers of gloves may be used if a specific hazard is identified.

5. Footwear

- a) Boots are a necessary component of any chemically protective ensemble. They must possess certain chemical and physical protection properties. Each item must be chemically resistant to the hazard. It must be physically protective in the sole area from puncture and must also be protective of the toe area from downward directional crushing forces. All footwear that falls into this category will normally have a protective sole plate and toe cap designed into the item itself.
- b) Any fully encapsulating garment utilized by the CCHMRT will be equipped with a gaiter/bootie foot assembly.
- c) When the above mentioned ensemble feature is utilized, the wearer shall use an over the sock boot that is a minimum 1-2 sizes larger than they would normally wear.

6. Thermal Protection

- a) **Entry suits** are for a brief exposure to a total flame environment, at temperatures below 2,000 degrees Fahrenheit. They provide some limited protection from steam. Cochise County/Fry Fire Hazmat Team does not currently possess any Entry suits.
- b) **Proximity Suits** are designed for a brief exposure to heat, not flame. Cochise County/Fry Fire Hazmat Team does not currently possess any Proximity Suits.
- c) **Flash Overcovers** lack the thermal protection held by both the thermal entry and Proximity suits. They offer only limited protection against an instantaneous flash of a flammable product. They cannot be worn alone, only as an outer garment. Cochise County/Fry Fire Hazmat Team does not currently possess any Flash Overcovers.
- d) **Flame Resistant Clothing** can be of either a coverall design or two-piece pants and shirt set. A flame resistant hood is also to be worn with either the coverall or two-piece outfits. Each member of the Fry Fire District is issued one Nomex shirt and Nomex pants.
- e) **Structural Firefighter Protective Clothing (SFPC)** is commonly known as either “turnouts” or “bunker gear,” this type of clothing is designed for fire suppression operations. Each member of the Fry Fire District is issued one set of turnout gear with rubber boots, Nomex hood and leather gloves.
- f) **Combination Ensembles** will generally consist of two options. Flame Resistant Clothing worn under a chemically resistant suit or SFPC worn under a chemically resistant suit.

- g) The Hazmat Supervisor shall consider the following issues with respect to utilization of combination ensembles: In a scenario, such as an overturned MC306/DOT 406 (semi-trailer truck) leaking fuel, a hazmat team member should consider wearing a Saranex Coated Tyvek Level B Type 1, fully encapsulating suit over SFPC.
- h) If the hazardous material ignites, the Sarnex coated Tyvek suit will simply “evaporate” off the member’s body leaving the SFPC to provide thermal protection. Other chemical resistant materials will “shrink wrap” the wearer. If ignition does not occur, the chemical protective garment will protect the SFPC from “wicking” up the flammable liquid. In incidents where the product presents corrosive or toxic properties, in addition to a high ignition hazard, a Level A Type 1 garment should be worn over the SFPC.

7. Communication

- a) Communication during mitigation of a hazardous materials incident is a critical factor. This is especially true concerning communications between crews in the contaminated and the non-contaminated areas. In OSHA 29 CFR 1910.120, it states that communication devices are optional equipment.
- b) CCHMRT will utilize radio communications whenever entry into a designated hot zone is made.
- c) CCHMRT operates with five dedicated hazmat radios, complete with voice-activated (VOX) or push to talk (PTT) headsets. The hazmat radios utilize a separate frequency than our Fry Fire radios.
- d) In the event the hazmat radios fail, the IC can consider utilizing our Fry Fire radios for communications during entry operations. Dispatch will be contacted and advised of the situation. Channels 2 or 3 will be used.
- e) The IC should always have access to a fire radio in the event that additional resources are needed. In addition, it may be necessary for communications with outside agencies.
- f) The VOX/PTT attachments are not a direct part of the hazmat radios, therefore, complications with the system sometimes occur. In this event, it is recommend that the entry team personnel consider detaching the VOX/PTT box from the radio and operate by keying the radio directly. In a Type I ensemble, this would require removing an arm from inside the suit.
- g) In the event of complete communications failure, the CCHMRT will utilize non-verbal communications (hand signals).
- h) All hazmat team personnel that utilize non-verbal communications need to remember the following three issues. They need to be few in number, easy to remember, and easy to understand.

- i) All personnel present at the incident, prior to hot zone entry shall review non-verbal hand signals.

8. Personnel Tracking

- a) A personnel-tracking system will be in use at all hazmat operations.
- b) Duct tape will not be used to create an identifying mark on a garment.

9. Construction features

- a) Closures used on Type I garments will be of the front entry type.
- b) All closures that are not gastight will be considered splash resistive only.

10. Selection Procedures

- a) The following procedures are recommend during selection of a chemical protective ensemble.
- b) If the CCHMRT Team does not have the proper ensemble on hand during an incident the decision will be made **not** to enter the hotzone. This decision should be made based upon research of permeation and degradation of clothing type choices.
- c) *Actual Breakthrough Time* is the average elapsed time between initial contact of the chemical with the outside surface of the fabric and the detection of the lowest detectable amount known as the System Detection Level (SDL) of the chemical on the inside surface of the fabric under test conditions.
- d) *Normalized Breakthrough time* is the time at which the permeation rate reaches 0.1 micro-grams/cm²/min. Normalized breakthrough times are useful for comparing barrier performance of different fabrics. With only normalized breakthrough times, you assume permeation rate of 0.1 micro-grams/cm²/min.
- e) CCHMRT Team will utilize Actual Breakthrough Times first, Normalized Breakthrough Times second and Degradation Data third.
- f) The selection process will be documented using the **PPE selection form** found in the appendices.
- g) If any of the below conditions exist a Level A Type I garment will be utilized during entry operations
 1. **The challenge chemical is toxic by skin absorption.**
 2. **The challenge chemical is corrosive.**

3. **The challenge chemical has a vapor pressure > 200 mm Hg.**
 4. **There is a high splash or immersion potential.**
 5. **The CCHMRT deems it necessary for any reason.**
- h) If the product is an oxidizer or has a flash point below 140 degrees Fahrenheit, thermal protection shall be considered.
 - i) When selecting a garment the CCHMRT will utilize permeation data as a first choice, due to its quantitatively objective measurement.
 - j) Select the fabric with the highest breakthrough time and the lowest permeation rate.
 - k) Go no less than 60-minute breakthrough time due to the nature of permeation data being collected in a controlled lab environment. When the fabrics are made into suits and put into the real world, there are many variables that will reduce the actual breakthrough time. The 60-minute value is a subjective limit based upon doubling the maximum amount of time during an entry with a 60-minute cylinder (1/2 the rated bottle capacity). With this limitation, an adequate margin of safety is provided.
 - l) Utilize degradation data if adequate permeation data is not available. This is due to its qualitative subjective nature. This might also be necessary due to the amount of degradation data that exists. Usually there is about four times as much degradation data available compared to permeation data, but as time progresses, this ratio will decrease.
 - m) If degradation data is utilized, the subjective ratings for selection dictate that either an A or B rating be the only choices allowed. Sometimes a degradation chart will use the words “excellent” in place of “A” or “good” in place “B”. Some common terminology found in degradation data is listed below.

A-Recommended (little or no effect)

B-Minor to moderate effect

C-Conditional (Varies from moderate too severe under different conditions)

X-Not recommended (severe effect)

I-Insufficient data to Rate

- n) After the above-mentioned items have been considered, selection of a garment, boots, and gloves from the suit inventory list (located in the appendices) is be made.

11. Work Mission Duration

- a) Mission duration is dictated by the type of respiratory protection devices, type of garment being used, weather conditions and type of mission being performed.

- b) If the temperature is below 50 degrees Fahrenheit and the entry team is wearing 60-minute cylinders, work duration will be up to 30 minutes. If the temperature is above 50 degrees Fahrenheit, duration of up to 20 minutes will be considered.
- c) If the temperature is below 50 degrees Fahrenheit and the entry team is wearing 30-minute cylinders, work duration will be up to 20 minutes. If the temperature is above 50 degrees Fahrenheit, duration of up to 15 minutes will be considered
- d) Cooling vests are a consideration for team members when heat injuries are possible.
- e) At least 8oz.of water will be consumed for hydration purposes by personnel performing work functions.
- f) Documentation of work times on and off air, in addition to work cycles will be noted on the appropriate forms.

12. Maintenance and storage

- a) All Level A and B garments will be acceptance tested upon purchase and every year there after or after any use. Testing will be performed in accordance with approved standards and equipment.
- b) All garments will be stored at rest (lying flat) when space permits. At no time, will an item of PPE be stored in such a way as to hinder the life of the garment.
- c) Any and all repairs made to any garments or equipment will be completed by the manufacture.

13. Decontamination and Disposal

- a) Protective clothing that is decontaminated may still have contaminants that have already permeated the equipment. When performing decontamination, we are only removing the surface layer of chemical. It may be difficult, if not impossible, to remove contaminants that has permeated the garment. A great deal depends on sustaining the compatibility data of the garment.
- b) Procedures for decontamination will follow the decontamination SOG. (reference part six, page 16)
- c) If the garment is of “limited use” it will be disposed of after any use. If there is any possibility that chemical permeation has occurred the garment will be disposed of as hazardous waste.

14. Training and proper fitting

- a) All personnel will receive the proper training prior to donning any garment.

- b) Required sizing of gloves, boots and suits will be performed as needed and properly documented prior to responding to a hazmat incident .

15. Donning and Doffing

- a) The following procedures shall be followed during donning and doffing operations:

1. Level B Type II garments

1. Obtain all of the components of the Level B Type II ensemble.
2. Inspect the SCBA and the facepiece.
3. Tear off strips of duct tape to seal the facepiece interface. This process will require six pieces of tape approximately 6” long with a tab on one end and two pieces of tape approximately 12” long.
4. Don chemical splash protective garment to the waist (legs and lower torso)
5. Don chemical protective boots. Ensure that the legs of the garment are placed over the boots.
6. Seal the interface between the boots and the chemical protective garment. Tape the garments to the top third of the boot using two wraps of tape and ensure that the tape does not “pucker” the boot garment.
7. Don the SCBA facepiece. (Remember to perform a negative pressure test of the facepiece seal. It is important that the facepiece seal be tested before securing the interface between the hood of the chemical protective garment and the facepiece).
8. Don the hood of the chemical protective garment.
9. Tape the interface between the facepiece and the suit. (If there is a gap between the facepiece and the suit at the throat, use two pieces of tape attached adhesive to adhesive to prevent the other pieces of tape from sticking to the skin). Use short pieces of tape (4” to 6”) and start from the bottom and work up both sides of the facepiece. The tape must overlap both the suit and the facepiece.
10. Secure the interface at the zipper. Seal the storm flap using tape. Reinforce the entire length of the zipper flap using tape.
11. Don the hard hat. The hard hat should be taped in place to prevent it from the falling off. Tabs should be placed on both ends of the tape to facilitate removal.
12. Don the SCBA using an assistant.

13. Don the inner gloves.
14. Don the outer gloves.
15. Tape the interface between the gloves and the suit. The tape must overlap the gloves and sleeve of the suit. Use care not to wrap the tape too tightly as it will restrict circulation to the hands. Leave a tab at the end of the tape to facilitate removal when doffing the ensemble.
16. Inspect the Level B Type II garment. Ensure that the facepiece is in place and the cylinder valve is fully open.

2. Type I fully encapsulating garments

1. Obtain all of the components of the Level A or Level B Type I garment.
2. Inspect the SCBA and the facepiece.
3. Lay the Type I garment with the face-shield up in front of the chair used for donning and inspect the garment. Determine that the garment is of the appropriate level. Operate the zipper in the full range of motion to ensure smoothness. Check the attachment of the outer gloves. Ensure that they are securely fastened.
4. Don the Type I garment to the waist.
5. Don the chemical protective boots. Ensure that the gaiters are over the boots.
6. Don the SCBA using an assistant.
7. Don the facepiece.
8. Don the hard hat with a towel attached.
9. Don the inner gloves.
10. Open the SCBA cylinder fully and connect to air.
11. Zip up the suit and secure the storm flap.
12. Document entire process using the type checklist.

3. Doffing chemical protective garments

- a) Any time PPE is removed, it should be doffed as if contaminated.
- b) Doffing procedures will take place in opposite of donning procedures.

- c) CCHMRT will follow the decon SOG (part VI) prior to any removal of chemical protective garments.

16. Inspection of chemical protective garments

- a) Chemical protective clothing shall be tested prior to placing it in service. This is called acceptance testing.
- b) If the garment fails acceptance testing the manufacture will be contacted immediately and advised of the situation. The suit will then be sent back to the manufacture for replacement.
- c) The documentation for each suit that is placed in service must include the following information: Garment specifications, suit identification number, date the garment is placed into service, name(s) of the personnel that tested the suit and the results of all suit testing performed on the garment.
- d) The following list of examinations needs to be performed on a garment after use. (The only item on the list that isn't necessary to be performed during the acceptance testing is decontamination). If limited use garments, which have been worn but not exposed to hazardous materials (such as backup or decon personnel assigned as rinsers), the garment may be returned back to service if it passes the appropriate tests. Limited use garments that have been exposed to hazardous materials should not be reused. Any reusable garment must be tested after each use.
 1. **Decontamination:** If a garment has been worn in a hazardous environment, it shall be decontaminated prior to inspection.
 2. **Visual inspection:** The garment shall be inspected to determine if there is any mechanical damage or visible degradation.
 3. **Tactile Inspection:** Degradation may not be visible, a tactile inspection shall be performed to check for areas of softness, stickiness, or other damage that is not readily visible.
 4. **Pressure Test:** Level A (gas tight) garments shall be pressure tested to ensure that they are gas tight. This test is not used for any other type of garment.
 5. **Soap Test:** If a Level A garment does not pass the pressure test, a detergent and water solution shall be used to locate the area of leakage.
 6. **Light Bar Test:** Inspection of chemical protective garment fabric and seams shall be performed for mechanical damage. This is facilitated by a fluorescent light placed inside the garment during inspection.
 7. **Documentation:** During and after the inspection process, the results of the inspection and testing process will be documented.

17. Testing Procedures

- a) Cleaning and decontamination are necessary to remove body odor and sweat generated by the wearer or any residual chemical that may still be on the garment, even after scene decon.
- b) The following process should be used for cleaning and decontamination of chemical clothing prior to inspection and testing:
 1. Don chemical protective clothing (Level D) prior to starting the process.
 2. The entire suit should be scrubbed with a detergent solution using a brush and rinsed thoroughly.
 3. The suit is hung and allowed to air dry (out of direct sunlight).
 4. The suit should be turned inside out and scrubbed using a detergent solution and rinsed thoroughly.
 5. The suit is kept inside out and again allowed to air dry. The suit will be returned to a right side out position.
- c) A **visual and tactile inspection** will be performed in a thorough manner as follows:
 1. Lay the suit on the table with the zipper open.
 2. With gloved hands, probe all interior and exterior surfaces to include all seams of the suit looking for fabric deformities, abrasions, tears or signs of degradation.
 3. Document all observations.
 4. Hazmat Technician makes determination if suit is accepted.
- d) The **pressure test** can only be performed on Level A garments and will be performed prior to placing the suit in service, after any use and/or annually.
 1. Remove the exhaust valves from the suit.
 2. Insert the plug valve into one of the suits exhaust valve openings.
 3. Insert the pressure test kit inflation hose into the remaining open exhaust valve hole and secure the fitting hand tight.
 4. Zip up the suit and lay it flat on a clean surface.
 5. Using the pressure test kit, inflate the suit to 5 inches of water column and begin timing. Allow three minutes for the suit to stretch and de-wrinkle.

6. Release pressure to 4 inches of water column and begin timing. Allow 4 minutes at the above pressure and note the remaining pressure on the gauge.
 7. If the suit has dropped below 1 inch of water column, it has failed. Any suit that has failed will be taken out of service and marked for training use only.
 8. Document all test results using the forms provided with the suit.
- e) All Level A garments that have failed will undergo the **soap bubble test**, in an attempt to locate the leak.
1. Re-inflate the suit to 5 inches of water column.
 2. Using a spray bottle, apply a soap solution to all areas of the suit. Particular areas of possible leaks are the glove attachments, zipper and face-shield.
 3. Prior to deflation, the suit should be rinsed and allowed to air dry.
 4. Document any leaks noted.
- f) The **light bar test** can be performed on any chemical protective garment.
1. Lay the suit flat on a clean surface.
 2. Plug in a portable fluorescent light.
 3. Turn off lights to darken the room.
 4. Pass the lighted tube in and around the surfaces of the suit and search for pinholes of light.
 5. Document any findings.

Note: Many pinholes will be found when examining Level B or C suits, as these garments are not gastight and may have numerous penetrations due to seam and zipper stitching. This does not discount the need to perform the test in an attempt to find mechanical damage.

Note: There are some chemical protective suits that are pigmented to make them more visible. Sometime this pigment will flake away leaving what appears to be a pinhole. This is only pigment falling off and in no way is a indication of suit failure.

18. Temperature Extremes, Heat stress and Medical considerations

- a) Temperature extremes and heat stress will be managed with forced hydration prior to and after PPE use.

- b) Each member entering a protective suit will drink a minimum of 8oz of water prior to and after each cycle of wearing PPE.
- c) The Hazmat Team Leader will ensure adequate personnel be available to provide correct cycling of personnel through rehab. If this is not possible, all entry operations will cease until this goal can be accomplished.
- d) Personnel will not make more than three, 20 minutes entries per incident.
- e) Cooling vests shall be worn at the discretion of the Hazmat Team Leader.
- f) The use of the mister is to be considered during rehab operations.
- g) An awing will be set up during any extended operations.
- h) All personnel donning PPE will be provided a pre and post medical monitoring check. Medical monitoring is to be documented on the medical evaluation form found in the appendices.
- i) Any personnel that begin presenting signs and symptoms of heat exertion will be treated accordingly.

19. Evaluation of the Effectiveness of the P.P.E Program

- a) The PPE program evaluation will take place yearly or as needed.
- b) An evaluation team of Hazardous Materials Technicians will be appointed to accomplish this task.
- c) The evaluation will consist of a minimum, but not be limited to the following subjects:
 - 1. Selection Criteria
 - 2. Equipment upgrades or new purchases.
 - 3. Operational procedures
 - 4. Testing and Documentation
 - 5. Medical monitoring/heat stress procedures.
 - 6. Work mission duration
 - 7. Significant safety issues
 - 8. Review of incident critiques as they apply to PPE.

Cochise County/Fry Fire Hazardous Materials Response Team

Suspicious Incident

Standard Operating Guidelines (Annex)

(a) General:

This Standard Operating Guideline Annex is intended to provide the Cochise County Hazardous Materials Response Team (CCHMRT) with an organized plan to mitigate suspicious incidents safely.

(b) Initial Response:

When responding to an incident of suspicious nature, the Team Leader should ensure the proper law enforcement agency has been notified and is enroute. This includes the local agency having jurisdiction and the Arizona Department of Public Safety. In incidents where a **credible** threat has been established, the FBI must also be notified. A credible threat would include an actual written or verbal threat, or an actual device or substance found at the scene.

(c) Objectives:

The primary objective at any incident is the safety of all responders involved. If at any time it is thought that the perpetrator(s) is still on scene or an explosive device is involved, the CCHMRT will respond to or retreat to a proper staging area and await an all clear from law enforcement. All packages, suspicious in nature, will be handled and dealt with as explosive devices. This means a proper ordinance disposal team or bomb squad will be requested to respond. This resource may come from a variety of agencies and will most likely be determined by the Domestic Preparedness Command Center or the DPS Duty Office.

The second objective will be to ensure public protection. Elements of public protection includes evacuations, protect in place actions, and decontamination. Prior to initiating these operations, the IC shall perform a risk/benefit analysis and choose the best option(s) to accomplish public protection.

(d) Scene Management:

A functional IMS will be utilized (see Part III of the CCHMRT SOGs). If decontamination of victims or responders is required, the IC shall ensure proper zones are set. If decontamination is not required, the IC may establish a simple perimeter. In both scenarios, isolation and denial of unauthorized entries should be performed.

(e) Decontamination:

When dealing with powder substances, full decontamination is seldom warranted. In the event of a victim opening a letter containing powder, hand washing and maybe face washing should be sufficient. As a rule of thumb: Only the person who opened the letter and those within six feet at the time it was opened should be considered exposed. In the case of mass contamination, such as mass quantity of a substance disseminated through a ventilation system or aerosol device, mass decontamination may be necessary. The CCHMRT does **not** advocate the use of bleach solution in decontaminating live victims or responders. The use of bleach may be considered in equipment or victim fatality decontamination only. The removal and or decontamination of fatalities will only be performed under the investigating law enforcement agencies request and supervision.

When dealing with liquids suspected of being chemical in nature, decontamination will be necessary. (see Part VI and the Medical Sector annex of the CCHMRT SOGs)

Responder decontamination will be performed any time a responder has come in direct contact with the suspected substance. Depending on the operation performed and the amount of contamination suspected, responder decon may vary from hand washing too technical decon.

Run-off containment shall be considered but will not impede the decontamination of victims. In the case of routine responder decon, run off will be contained and disposed of properly.

(f) Personal Protective Equipment:

Personal Protective Equipment for entry operations will include at a minimum, SCBA, Tyvek Coveralls, Butyl rubber gloves, Latex overboots, and taped interfaces for powder substances and SCBA, Level B Type II, Butyl rubber gloves, Chemical boots, and taped interfaces for liquid substances. FRO personnel in structural firefighting protective clothing with

SCBA, Butyl gloves, and taped interfaces may initiate defensive operations to include mass victim decontamination. The CCHMRT does not currently advocate SBCCOM recommendations. However, members of the team have been made aware of the SBCCOM testing and when additional information is obtained, the CCHMRT may reconsider its decision in the future.

(g) Detection and Sampling:

Product sampling of suspicious substances will only be performed with the request and supervision of the law enforcement agency having investigative jurisdiction. Proper sampling techniques will be utilized. The outer Packing will be decontaminated prior to exiting the hot zone.

The CCHMRT does not currently have biological substance detection capability. The Arizona Department of Health Services is the lead agency for anthrax testing. All samples collected will be sent to the proper laboratory for analysis. This will be coordinated via the law enforcement agency having jurisdiction.

The CCHMRT does possess chemical warfare detection capability. Do to the possibility of a false positive, multiply detection devices will be used simultaneously when monitoring for chemical warfare agents.

Cochise County/Fry Fire Hazardous Materials Response Team

Haz-Mat Medical

Standard Operating Guidelines (Annex)

(a) Purpose:

The purpose of this guideline is to establish a competent level of emergency medical response to hazardous materials emergencies within Cochise County.

(b) Medical Sector Officer:

Any hazardous materials emergency requiring offensive operations will require the Incident Commander (IC) to designate a Medical Sector Officer to oversee Support/Medical Sector (see Part III of the Cochise County Hazardous Materials Response Team (CCHMRT) SOG's for more information on Support/Medical Sector).

The Medical Sector Officer will ensure that sufficient personnel are available on the scene to treat and transport any potential victims. The Medical Sector Officer should be trained to the level of Paramedic (Arizona Certified).

The Medical Sector Officer will assist and receive information from Research Sector. Information to be noted will include proper decontamination techniques, signs and symptoms of exposure, antidotal information, procedures for supportive care, and any other information pertinent to the emergency.

The Medical Sector Officer will brief all members of the Support/Medical Sector prior to any offensive operations. The Medical Sector Officer will contact Sierra Vista Regional Health Center (SVRHC) and Poison Control to advise of the situation. He/she will then report all pertinent information, if known, concerning the substance involved and the possibility of victims.

The Medical Sector Officer will ensure that all necessary equipment is on scene and in a state of readiness.

(c) Patient Decontamination

In the event of a victim(s) exposure, the Medical Sector Officer will ensure that proper decontamination has been performed prior to any medical treatment. Suggestions for adequate decontamination is at least fifteen minutes of irrigation using copious amounts of water, if the substance is water soluble. If the substance is not water-soluble or just moderately water soluble, soap and water should be used. The soap will act as a surfactant in removing the substance from the body. During decontamination, special attention should be given to all skin folds (arm pits, groin, etc.).

Decontamination is only to be performed in the warm zone by decon personnel wearing the appropriate personnel protective equipment (PPE). (See Part IV of the CCHMRT SOGs for more information on zoning)

In situations of severe medical emergencies such as an obstructed airway, gross decontamination may be performed first allowing life saving procedures to be initiated, followed by a systematic decontamination. This may only be performed if determined safe to do so.

Certain substances such as bases may require continuous decontamination, even during transport, to stop further corrosive tissue injury. Continuous eye irrigation may also be required depending on the substance involved. If decontamination is to be performed during transport, a make shift catch basin can be constructed by placing a piece of thick rolled plastic over the gurney and taping the edges together. It is important to understand that in this scenario the patient would have already been decontaminated to protect against secondary contamination. The continued decon is only to prevent further corrosive or irritant injury.

Under **no** circumstance should a contaminated patient be transported (see Part VI of the CCHMRT SOGs for information on decontamination).

(d) Tox-Medic and Tox-Medic Drug Box

A Tox-Medic is an Arizona State Certified Paramedic who has undergone additional training specific to haz-mat patient treatment. This additional training must meet all the required items set out in the Arizona Department of Health Services, Bureau of Emergency Medical Services R9-25-807. The Tox-Medic must also be at least certified to the haz-mat first responder level.

A minimum of eight hours of haz-mat continuing education (CE) must be completed and documented annually.

The Tox-Medic Drug Box (tox box) is to be stored at station one. It is to remain locked in its designated cabinet unless being inspected or in use. The Atropine and Amyl Nitrite are to remain locked in the designated refrigerator unless being inspected or in use. The tox box is to be inspected at least weekly and before responding to an emergency. The box will be marked with a specified date of return. When the date is reached, the box will be exchanged at SVRHC. Control numbered locks will be placed on the tox box after every inspection. A log of the control number locks will be kept.

(e) Drug Box Contents

Atropine 8mg/20ml vial (0.4mg/ml)	12 vials
Cyanide Antidote Kit	2 Kits
Amyl Nitrite (0.3ml/amp)	12 ampoules
Sodium Nitrite (300mg/10ml amp)	2 ampoules
Sodium Thiosulfate (12.5g/50ml amp)	2 ampoules
Diazepam 10mg/2ml (5mg/ml)	2 tubexes
Methylene Blue 100mg/10ml (10mg/ml)	2 ampoules
Pralidoxime 1g (to be mixed with 20 mls NS)	2 vials
Propranolol 1mg/ml	2 ampoules
Terbutaline 1mg/ml	4 ampoules

(f) Tox-Medic Response

If a Tox-Medic is available, the tox-box will be taken with the CCHMRT on any call out. It will be secured on either Haz-Mat One or a responding medic unit. A Fry Fire medic unit may not always be available to respond with the Haz-Mat Team on calls outside the fire district. In this situation, a medic unit from the jurisdiction requesting service will be requested. The Medical Sector Officer will brief and supervise the personnel on the medic unit and ensure their equipment is in working condition.

In cases where victim(s) exposure has already occurred. A Tox-Medic may take the tox-box and respond ahead of other units to either the scene or a predetermined location to meet with first responders. The Tox-Medic should first ensure decontamination has been performed if needed. If after decontamination and patient assessment has been performed, it is determined that ALS intervention is needed, then the Tox-Medic will immediately seek medical direction and began patient treatment.

(g) Patient Treatment

In the event of a toxic exposure, remember that good basic care (airway, breathing, circulation) is the corner stone of patient management. In cases of cardiac dysrhythmias or diminished cardiac output, ACLS guidelines should be followed except in certain situations where slight modification of patient treatment may be required such as hydrocarbon or halogenated hydrocarbon exposure. In these and all cases medical direction from SVRHC and Poison Control shall be followed.

(h) Patient Transport

Some hazardous substances either remain toxic or become toxic during metabolism and subsequently bodily excretion such as sweating, defecation, urination, and respiration. These bodily excretions may be hazardous. This condition should be noted during chemical research and precautions taken to avoid health care personnel exposure. Methods to prevent this type of exposure may include placing an O2 mask over the patient's mouth, ventilating the medic unit during transport, and utilizing proper bodily substance isolation precautions. Depending on incident elements, a primary goal may be transportation via helicopter to UMC for definitive toxicological treatment. In either ground or air transport, the Tox-Medic has a great responsibility to ensure that proper decontamination has occurred prior to transport.