

CHAPTER 7

NBC OPERATIONS

Section I

Nuclear Incidents

OVERALL RESPONSIBILITIES

The **headquarters** having administrative control of the EOD company provides the location of the incident, identification of the explosive ordnance items, radiological survey and contamination information, and the name and location of the individual authorized to grant access to the incident site. It must also identify security and evacuation measures being enforced and provide positive identification of the person authorized to receive the explosive ordnance items.

When the **EOD company** is assigned a nuclear accident/incident, it prepares to go to the scene by the fastest means. The team notifies the EOD battalion and coordinates with the NAIRA officer. If the EOD team leader is the first military representative on-site, he will assume control. The EOD commander (or senior EOD person present) is responsible for the safety of EOD personnel when they enter the hazard area.

Either the **on-site commander** or the **NAIRA officer** is responsible for the management of nuclear incident operations. In hostilities, the on-site commander may assume all responsibilities of a NAIRA officer (IAW AR 50-5). Resources available to the NAIRA officer for supporting operations include at least the following:

- Communications equipment (civilian and military).
- NBC teams (survey and decontamination).
- Transportation (including air).
- Medical teams and facilities.
- Engineer personnel and equipment.
- EOD personnel.

- Security forces (military and civilian).
- Military police.

EOD OFFICER RESPONSIBILITIES

How the **EOD officer** handles the incident depends on resources available. It also depends on the current tactical situation, directives from the headquarters having operational control of the detachment, and quantity and type of weapons involved. Specific responsibilities of the EOD officer include:

- Locating a potential CP site. If the area is known to be free of contamination, it may be approached from any direction. There is no need to monitor the route or CP area. Suspect areas must be approached from upwind. If contamination is suspected, the area must be checked with an alpha survey meter and a low-range gamma survey meter. The alpha survey meter may be used for spot checks, but the gamma survey meter must be used continuously. Surveys should begin at least 1 mile from the proposed CP site.
- Designating the CP supervisor.
- Designating a recorder.
- Assigning an equipment specialist.
- Assigning available personnel to work for the CP supervisor.
- Designating the IEP members (at least two EOD personnel trained in NWs).
- Designating the work party members. The WP must consist of at least an NW-trained EOD officer and another NW-trained soldier (officer or enlisted). The most common WP includes an NW-trained

officer as team leader, two NW-trained enlisted personnel as workers, and one NW-trained person responsible for tools and communications.

- Assigning an ECCS supervisor.
- Selecting the communications system to be used.
- Determining respiratory protection required.
- Preparing the IEP/WP to enter the incident site.
- Determining and implementing EMR precautions as necessary. The NAIRA officer or on-scene commander must be notified of any EMR. This officer, in turn, notifies the support elements.

COMMAND POST SETUP AND RESPONSIBILITIES

The EOD response team goes to the site as fast as possible. Once at the site, they must set up a CP. The EOD officer must consider several factors when setting up the CP:

- The area must be free of contamination and, if possible, have advantageous terrain features IAW FMs 3-21 and 20-3.
- The mode of transportation to be used to go to the incident site must be considered.
- If the item is unknown, an initial HE exclusion area with at least a 610-meter fragmentation radius plus a 50-meter ECCS distance must be established.

The CP site must be upwind of the incident site or suspected contaminated area. It must also be close to, but separate from, support element operations. No other element should be established closer to the incident site than the EOD CP.

CP Supervisor

The CP supervisor organizes the CP for on-site operations and maintains contact with the headquarters having operational control of the EOD company. The CP supervisor is responsible for the following:

- Keeping the NAIRA officer informed of the incident progress.

- Inspecting the WP to ensure proper dress out and equipment setup.
- Ensuring dosimeters and film badges are worn properly. Dosimeters must be in the breast pocket of garments with pockets or on the upper arm of those without pockets. Film badges must be worn on the upper chest with the beta window uncovered and facing out.
- Adjusting the exclusion area as new information is received and making recommendations to the NAIRA officer or on-scene commander.
- Requesting disposition instructions for the contaminated waste, classified components, and other contaminated items.
- Notifying the survey team or decontamination team, or both, of the type and amount of radiological contamination.
- Protecting classified information in the CP and making sure all classified materials are accounted for after the incident is completed.
- Preparing required reports and closing out the CP as required.
- Supervising the recorder, equipment specialist, and ECCS supervisor.
- Documenting radiation exposure using a radiation work permit IAW AR 40-14. Information from the RWP must be entered on the individual's DD Form 1141 or automated dosimetry record. The RWP should fit the needs of the situation and be produced locally. Figure 7-1 is an example. The RWP must include the following:

- Potential hazards.
- Protective clothing to be used.
- Special equipment requirements.
- Names and SSNs of individuals working at the site.
- Serial numbers of personnel dosimeters.
- Film badge numbers.
- Time entering the site.
- Time departing the site.
- Initial dosimeter readings.
- Final dosimeter readings.

1. Potential Hazards:							
2. Protective Clothing:							
3. Special Equipment:							
Name	SSN	Dosimeter S/N	Out Reading	In Reading	Film Badge#	Time Out	Time In
SAMPLE							

Figure 7-1. A sample radiation work permit

- Requesting and coordinating support needed for such things as protective measures, evacuation, medical, decontamination, and tactical security.
- Ensuring the RSP is completed.

Recorder

The recorder keeps a complete and accurate record of all actions and maintains communication with the WP. He also relays information received to the CP supervisor and ensures that classified paperwork generated in the CP is properly marked and safeguarded.

Equipment Specialist

The equipment specialist is in charge of tool assembly, equipment checkout, respiratory apparatus setup, preoperational and operational checks of equipment, and charging pocket dosimeters. He also assists the WP in putting on protective clothing and starting equipment. He also keeps a log of all equipment that is missing, broken, used up, or destroyed. Finally, he loads the tools and equipment for return to the unit.

EOD Officer

When the team is ready to leave the CP, the EOD officer briefs all personnel on the following:

- Identification and number of weapons involved, publication requirements, and location of the incident. He also briefs on the mode of travel, route of march, and assessment of the threat to the local area.
- Tool and equipment requirements.
- Any special instructions from the EOD battalion on-scene commander or the NAIRA officer. These may include additional instructions, issue of strip maps or overlays (if appropriate), review of publications about the weapons, and requests for military or civilian police escort (if required).

IEP/WP FUNCTIONS AND RESPONSIBILITIES

Since nuclear weapons can cause mass destruction, EOD personnel must consider **safety first**. Safety considerations include the two-person concept and contamination control. The following

extract from AR 50-5 summarizes the two-person concept:

“At least two authorized persons, each capable of detecting incorrect or unauthorized procedures with respect to the task being performed and who are familiar with applicable safety and security requirements. Both persons will be present during any operation that affords access to a nuclear weapon. The concept prohibits access to a nuclear weapon by a lone individual. Two authorized persons will be considered to be present when they are in a physical position from which they can positively detect incorrect or unauthorized procedures with respect to the task or the operation being performed. When the two-person concept must be applied, it will be enforced constantly by the persons who are the team while that team is accomplishing the task or operation assigned.”

The **IEP** acts to contain and control the nuclear incident safely while conducting its IEP tasks. Some circumstances require the **IEP** to assume the functions of the **WP**. For this reason, when the **WP** is mentioned in this chapter, it includes the **IEP** as well.

The **WP** prevents nuclear detonation and prevents nuclear contribution to a high-explosive detonation. The response team must also identify, detect, and contain or eliminate explosive, radiological, and toxic hazards associated with nuclear weapons.

Before Response

Response to the incident involves several planning operations. These include gathering information, planning the route, and selecting the personnel, equipment, and procedures for the operation.

The EOD team should carry, as a minimum, detection equipment, first aid materials, a means of communication, and EOD tools and equipment.

Protective clothing and equipment requirements must be planned before the team arrives at the site. Information available about the situation helps the EOD team leader plan. If the extent of contamination is unknown, the EOD team leader must take the maximum protection possible without

unnecessarily restricting operating efficiency. Nearly all situations require respiratory protection. The EOD team leader must use this information and carefully monitor personnel to prevent casualties.

During Response

The **WP** monitors for alpha, beta, and gamma radiation on the way to the incident site as well as on the item and in its immediate vicinity. The **WP** may use drop cloths to prevent the spread of contamination.

The **WP** sets up and maintains constant communication with the **CP**. They report to the **CP** the monitor instrument readings. The **WP** also observes fuze precautions for the munitions involved. The **WP** must report all activities to the **CP** as they occur. This includes **RSP** steps and any deviations. They make sure that classified information is passed on by secure means.

Some circumstances may require the **WP** to deal with criticality, fire, or other life-threatening problems prior to the **RSP**.

The **WP** identifies, or confirms the identity of, the weapons, components, or both, and tries to verify the serial numbers. The EOD officer designated to respond to the nuclear incident determines the EOD render safe procedure to use and supervises its conduct to conclusion. EOD render safe procedures may be started only in the presence of an **NW**-trained EOD officer. The **WP** then reports the physical appearance of the weapon to the **CP** and performs the **RSP** prescribed in the applicable nuclear EOD publication. The **WP** will not deviate from the published **RSP** without **NAIRA** officer agreement, except in case of emergency.

Then they systematically search the area to recover, identify, and segregate components of weapons. They separate recovered components into these categories: nuclear, nonnuclear, hazardous, classified, and explosive. This is done **IAW TM 9-1185-240** and other **TMs**.

EOD may perform preliminary packaging if the weapon is contaminated or damaged. More extensive packaging for off-site shipment requires additional support from the **NAIRA** team. It is important that security measures **IAW AR 50-5** be enforced when weapons and components are processed through the contamination control station.

Upon Closeout

To close out operations, the WP moves the weapons, tools, equipment, publications, and personnel to an area with the lowest radiation possible. Before departing, it places hazard markers IAW STANAG 2002. The WP must maintain security of the weapons and components until properly relieved by NAIRA-sponsored agents. The WP then returns to the CP after being processed through the contamination control station (if required).

Performing the EOD procedures on a weapon involved in an accident/incident does not constitute or imply change of custody of the weapon. After emergency procedures have been completed, custody of the weapon remains with the courier or custodian. Custody may be transferred, as directed by the on-scene commander, from the courier or custodian in order to make further transport easier. If custody is transferred, EOD personnel must give technical advice on weapon condition and the presence or absence of components.

ECCS SETUP AND OPERATIONS

Personnel and equipment entering and exiting the incident site must take the route least likely to cause exposure to or spread contamination. Therefore, all personnel and equipment returning from a contaminated area must proceed through a contamination control station. When there is no decontamination support, this is usually an ECCS set up and run by the EOD team. The EOD unit commander may establish an ECCS for limited contamination control and limited decontamination. When the nuclear emergency team arrives, it sets up a contamination control station and relieves EOD of this requirement.

The ECCS must be between the CP and the incident site and outside the fragmentation range of the munition. It must be set up in an area free of contamination, upwind of the incident, and at least 50 meters downwind from the CP.

A critical feature of the ECCS is the **hot line**. It is an imaginary line separating the contaminated area from the contamination reduction area. The hot line should be as close to the item as possible but outside its fragmentation radius (610 meters for unknown nuclear weapons). All personnel and equipment entering and leaving the incident area

must process through the control point on the hot line.

The CCL separates the contamination reduction area from the redress area. Personnel do not cross into the redress area until they are free of contamination or have acceptable levels of contamination. The CCL also prevents personnel from entering the contamination reduction area without wearing proper protective clothing.

The ECCS should be protected from the weather, if possible. It must be run by at least one EOD soldier dressed in the proper protective clothing from the time personnel depart for the incident site until all personnel have been processed out. See Figure 7-2 (page 7-6).

The contamination reduction area may be contaminated by personnel returning from the incident area. Therefore, once decontamination operations begin, the contamination reduction area is considered contaminated.

The operation of the ECCS should be turned over to an NBC team (the nuclear emergency team) on its arrival. If EOD operations are completed before the NBC team arrives, team members and other personnel should go through the ECCS. The ECCS team must be prepared to turn over the operation to the incoming decontamination team (part of the NBC team). The contamination reduction area must be marked with contamination markers until the area is decontaminated (see Appendix B).

There is no need to process through an ECCS if no contamination was encountered. There is one exception: personnel who handle or come in contact with nuclear components must wash their hands and face using hot soapy water and rinse them with clear water.

DEPLETED URANIUM INCIDENTS

Accidents/incidents involving ammunition or armor containing DU components pose special problems. Guidance for all personnel in dealing with DU is found in Chapter 6 of TB 9-1300-278. The chapter addresses EOD personnel protection and procedures. EOD soldiers should be familiar with its contents before responding to any incident that may involve depleted uranium.

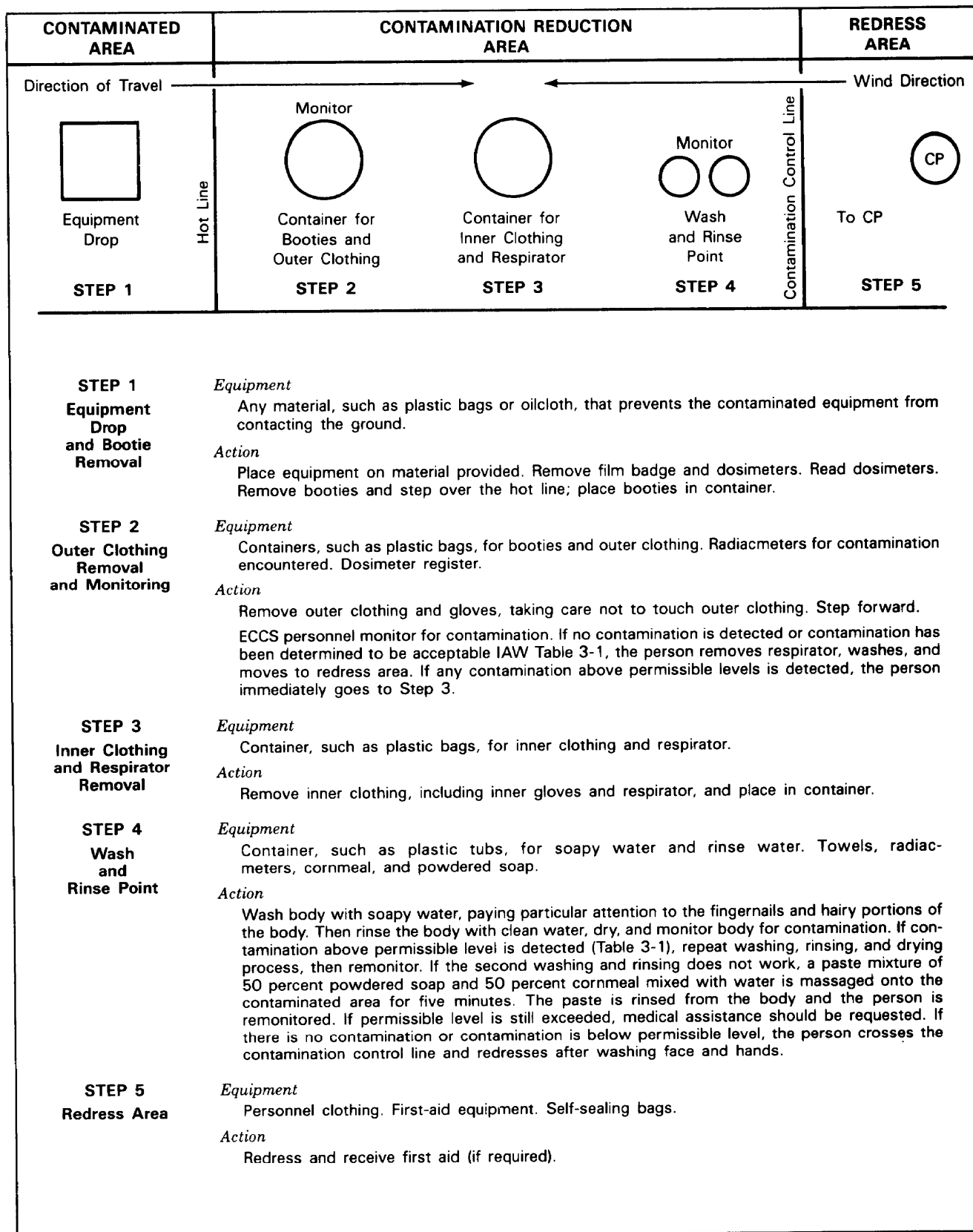


Figure 7-2. Emergency contamination control station

Section II

Chemical And Biological Incidents

Because chemical agents are the most likely threat to be encountered, the word “chemical” is used in the following discussion. However, the possibility of biological agents being used must always be considered. All CB weapons have the same purpose--to spread contamination. Therefore, the EOD approach to deal with them is the same.

OVERALL RESPONSIBILITIES

The headquarters having administrative control of the EOD company provides the location of the incident, identification of the explosive ordnance items, survey and contamination information, and the name and location of the individual authorized to grant access to the incident site. It must also identify security and evacuation measures being enforced and provide positive identification of the person authorized to receive the explosive ordnance items.

When the **EOD company** is assigned a chemical accident/incident, it sends a response team to the scene by the fastest means. The team notifies the EOD battalion and coordinates with the CAIRA officer. In some cases, the EOD team leader may be the first military representative on-site and will assume control. The EOD team leader is responsible for the safety of EOD personnel when they enter the hazard area.

Either the **on-site commander** or the **CAIRA officer** is responsible for the management of chemical incident operations. In hostilities, the on-site commander may assume all responsibilities of a CAIRA officer (IAW AR 50-6 and DA Pamphlet 50-6). Resources available to the CAIRA officer for supporting operations include at least the following:

- Communications equipment (civilian and military).
- NBC teams (survey and decontamination).
- Transportation (including air).
- Medical teams and facilities.
- Engineer personnel and equipment.
- EOD personnel.
- Security forces (military and civilian).
- Military police.

The **light EOD response team** handles the incident based on the resources available, the current

tactical situation, directives from the headquarters having operational control of the EOD company, quantity and type of weapons, and types of agents. The team may be able to complete the incident without additional support from the EOD company.

However, the situation may change and the light EOD response team leader may need to request assistance from the CP. The light EOD team leader must determine if his team can handle the incident by asking--

- How much contamination is present and how likely is gross contamination?
- How many ordnance items are involved and what are their fuze conditions?
- What procedures will be used on the ordnance (RSP or blow in place)?
- Can the unit being supported help the response team with additional personnel or equipment?

If additional support is requested, the **EOD officer** will first locate a potential fragmented CP site. If the area is known to be free of contamination, it may be approached from any direction. There is no need to monitor the route or CP area. Suspect areas must be approached from upwind, and team members must put on protective clothing in a clean area. If contamination is suspected, the area must be checked with detector paper/kits. Surveys should begin at least 1 mile from the proposed CP site. The team must take samples of suspect contamination during the approach to be sure the area upwind of the CP site is contamination free. If contamination is found at the proposed site, personnel must decontaminate themselves and select another site.

The EOD officer will also need to do the following:

- Designate the CP supervisor (usually the company NCOIC) and assign available personnel to work for him.

- Designate a recorder.
- Assign an equipment specialist.
- Designate the IEP members (at least two EOD personnel). These would include an SSG or above to be the IEP team leader, an EOD specialist to be the IEP assistant, and any available person trained to provide “buddy aid” for NBC casualties to be the safety observer.
- Designate the WP members. The same selection criteria are used as for the IEP.
- Assign an SSG or above to be the EPDS supervisor and two EOD specialists to be EPDS assistants.
- Select the communications system to be used.
- Determine protective clothing requirements.
- Prepare the IEP/WP to enter the incident site.
- Determine the need for and implement (if necessary) EMR precautions. The CAIRA officer or on-scene commander must be notified of any EMR. This officer, in turn, notifies the support elements.

COMMAND POST SETUP AND RESPONSIBILITIES

If necessary, the proposed site for the CP will be checked for possible contamination. There must be enough checks made to convince the EOD team leader that the entire CP area is free of contamination. If all tests are negative, he can use the unmasking procedures in FM 3-4. Since current field tests cannot detect biological agents, an area is not considered free of biological contamination unless intelligence information or physical evidence confirms it. If biological agent contamination is suspected, take samples and send them to a laboratory for identification.

When selecting a site for the CP, you must consider the mode of transportation to be used to get to the incident site. You will also have to establish an exclusion area as for conventional ordnance, with two exceptions. When there are no explosive components, you can reduce the exclusion area to a 50-meter radius. This is done with concurrence of

the CAIRA officer or the on-scene commander. When the team has not yet determined what types or numbers of explosive components there are, the minimum exclusion area must have a 450-meter fragmentation radius plus a 50-meter EPDS distance.

A downwind hazard area must also be established. If the type of agent or its amount is unknown, the hazard area must extend 2,000 meters downwind from the incident site (Figure 7-3, page 7-9). TM 60A-1-1-11 gives detailed procedures for establishing the downwind hazard area. Evacuate all unprotected personnel from the hazard area or require them to wear chemical protective clothing. The on-scene commander should ensure the personnel conducting the evacuation also wear protective clothing.

The CP site must be upwind of the incident site or suspected contaminated area and be close to, but separate from, support element operations. No other element should be established closer to the incident site than the EOD CP.

CP Supervisor

The CP supervisor organizes the CP for on-site operations. He maintains contact with the headquarters having operational control of the EOD company as well as the company HQ or EOD battalion. In addition, the CP supervisor is responsible for the following:

- Keeping the CAIRA officer informed of the incident progress.
- Advising the commander on WP procedures and operations.
- Checking the WP methods and advising them on alternative courses of action.
- Directing research in support of the team.
- Monitoring log entries.
- Coordinating for external support.
- Inspecting the WP to ensure proper dress out and equipment setup.
- Adjusting the exclusion area and downwind hazard area as new information is received and making recommendations to the CAIRA officer or on-scene commander. He posts this information to the situation map.

- Requesting disposition instructions for the contaminated waste, classified components, and other contaminated items.
- Notifying the survey team and decontamination team of the type and amount of radiological contamination.
- Protecting classified information in the CP and making sure all classified materials are accounted for after the incident is completed.
- Preparing required reports and closing out the CP as required.
- Supervising the recorder, equipment specialist, and EPDS supervisor.
- Requesting and coordinating support needed for such things as protective measures, evacuation, medical, decontamination, and tactical security.

Recorder

The recorder keeps a complete, accurate record of all actions, maintains communication with the

WP, relays information received to the CP supervisor, and ensures that classified paperwork generated in the CP is properly marked and safeguarded.

Equipment Specialist

The equipment specialist is in charge of tool assembly as well as the preoperational and operational checks of equipment. He also assists the WP in putting on protective clothing and starting equipment. He keeps a log of all equipment that is missing, broken, used up, or destroyed. Finally, he loads the tools and equipment for return to the unit.

Team Leader

When the team is ready to leave the CP, the EOD team leader briefs the team on the following:

- Identification and number of weapons involved, publication requirements, and location of the incident. He also briefs on the mode of travel, route of march, and assessment of the threat to the local area.

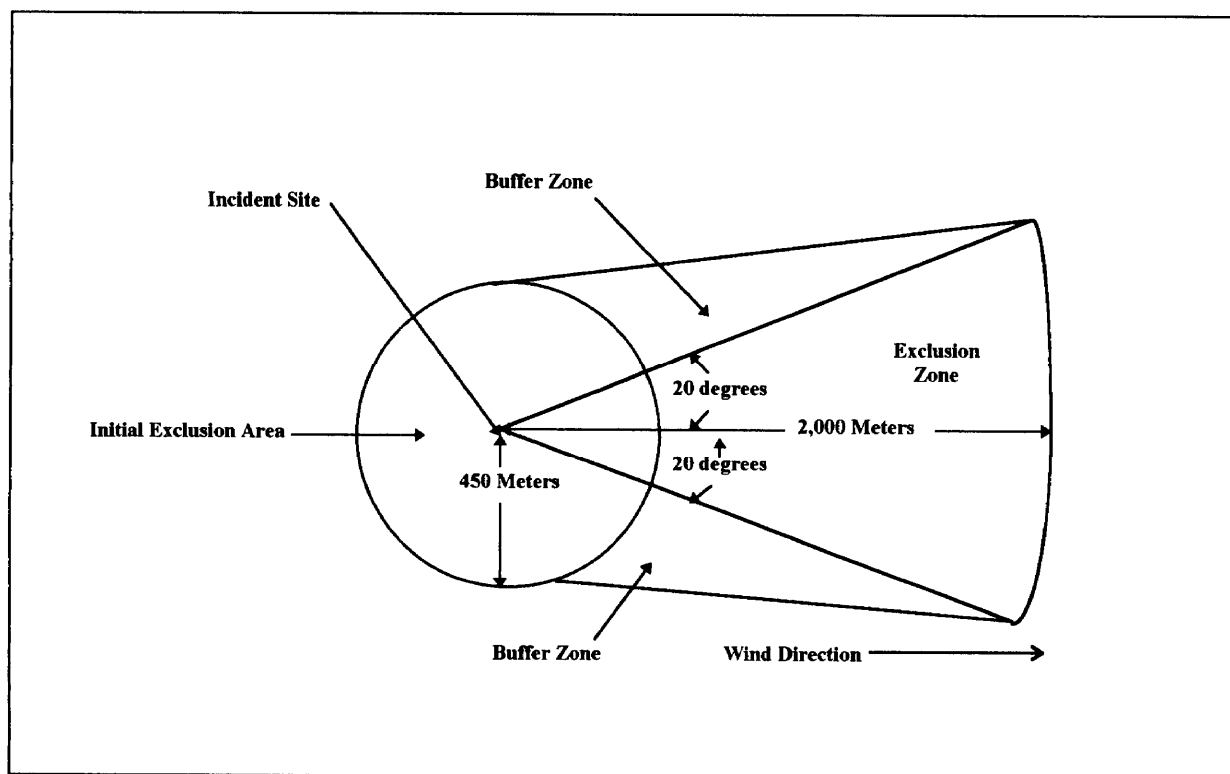


Figure 7-3. Initial downwind hazard area

- Tool and equipment requirements.
- Any special instructions from the EOD battalion, on-scene commander, or CAIRA officer. These may include additional instructions; issue of strip maps or overlays, if appropriate; review of publications about the weapons; and requests for military or civilian police escort, if required.

The EOD team leader must be prepared to take control of the situation on his arrival. There may be confusion at the site as to what protective measures are required and who is responsible for the various jobs. The EOD team leader must direct protective measures, evacuation, and coordination for other support personnel.

IEP RESPONSIBILITIES

Safety measures are the foremost responsibility of EOD personnel because of the lethality of CB agents. Safety measures include the two-person concept, the exclusion area, the downwind hazard area, and contamination control. The two-person concept applies while any work is done on the ordnance. Chapter 3 of AR 50-6 provides details on this concept.

The IEP must determine the location, number, and condition of the munitions involved. They must also determine the fuzing and its condition, the presence or absence of agent leakage, and the weather conditions at the site. If rescue operations are required or there is a serious public health hazard, the IEP must quickly evaluate the situation and take emergency measures. This may mean the IEP will depart before the CP or EPDS is completely set up.

Performing the RSP and performing contamination control and decontamination are the two main functions of the WP. If the situation dictates, combine the EP and WP functions. This is only advisable when the exact situation is known.

Before Response

Response to the incident involves several planning operations. These include gathering information, planning the route, and selecting the personnel, equipment, and procedures for the operation.

The EOD team should carry, as a minimum, detection equipment, first aid materials, a means of communication, EOD tools and equipment, and limited amounts of decontaminants. Use TM 60A-1-11 to help select the appropriate decontaminants.

The size and number of the munitions involved will determine equipment requirements. If total agent disposal cannot be done on site, the items must be packaged suitably for transportation and subsequent storage and neutralization.

Protective clothing and equipment requirements must be planned before the team arrives at the site. Information available about the situation (type and amount of agent) will help the EOD team leader plan. If the type of agent and extent of contamination are unknown, the EOD team leader must take the maximum protection possible without unnecessarily restricting operating efficiency. See Table 7-1 (page 7-11) for recommended protective clothing.

Nearly all situations require respiratory protection. Refer to TM 60A-1-11 for the maximum wearing time of impermeable clothing. The EOD team leader must use this information and carefully monitor personnel to prevent casualties.

During Response

The IEP should approach by the most direct route, keeping upwind and avoiding heavy vegetation if possible. The team should look for obvious contamination, such as agent deposits (liquid or powder) in the area and people or animals showing symptoms of agent exposure. If suspect liquids are present, the team should check them with M8 or M9 paper. When the team is close to the incident site, the team leader should survey the area and situation and decide where best to place the safety observer. The safety observer must be able to watch the other team members and operate the communications equipment.

The IEP sets up and maintains constant communication with the CP. The IEP also observes fuze precautions for the munitions involved. The IEP must report all activities to the CP as they occur. They make sure that classified information is passed on by secure means.

Table 7-1. Recommended chemical protective clothing

CLOTHING	G-SERIES NERVE CHEMICALS	UNKNOWN FOREIGN, V-SERIES NERVE, BLISTER CHEMICALS, LIQUID BIO	DRY BIO, INCAPACITATING, RIOT, BLOOD, CHOKING AGENTS	FS OR HIGH CONCENTRATIONS OF SCREENING SMOKE	FUELS AND OXIDIZERS
Impregnated underwear, socks, and gloves	X	X			
Coverall, TAP	X	X			X
Coverall, MFH ¹	X		X	X	X
Coverall, explosive handlers or field clothing	X			X	X
Boots, TAP	X	X			X
Boot covers, TAP	X	X			X
Boots, combat			X		
Hood, TAP	X	X	X ²		
Hood, M6A2	X		X ²	X	X
Hood, MFH ¹					
Protective mask, M17-series			X ²	X	
Protective mask, M9A1	X	X	X ²		X
Self-contained breathing apparatus ³					
Gloves, cotton			X		
Gloves, surgeon's	X				
Gloves, TAP	X		X	X	
Gloves, MFH ¹					
Apron, TAP			X	X	
MOPP ⁴	X	X	X	X	

1. Missile fuel handler's (MFH) gloves, hood, and coveralls must be color coded by the user: Red for fuels, green for oxidizers. Once used, they must not be mixed; e.g., green gloves may not be used on fuels.
2. Either the M9A1- or the M17- series masks may be worn.
3. Self-contained breathing apparatus should be used in lieu of protective masks whenever an oxygen-deficient atmosphere exists or in closed areas where high concentrations may exist.
4. During EOD operations in time of conflict, Level 4 MOPP (without body armor) and TAP apron may be worn.

FS = fuming smoke
 MFH = missile fuel handler's
 MOPP = mission-oriented protective posture
 TAP = toxicological agent protective

The shuffle pit is used for controlling contamination at the incident site. It is made from a mixture of three parts earth and two parts STB spread out on the ground in an area about two feet square. All personnel entering or leaving the incident site area must shuffle through the pit.

The IEP must determine the location, number, and condition of the munitions involved. It must also determine the fuze and its condition, presence or absence of agent leakage, and the weather conditions at the site. The IEP will take the following actions for leaking munitions:

- Separate the nonleaking munitions from the leakers, if fuze conditions permit.
- Test suspect liquids with either M8 or M9 paper. If the test is positive and there has been no decontaminant use, this check is adequate.
- Complete a vapor check if the paper test was negative and contamination is still suspected. Before beginning vapor tests, try to collect vapors. Drape a plastic bag or other impermeable material over the UXO and wait a few minutes. Stick the M18 detector tubes under or through the bag and test for contamination.
- Try to limit any spread of contamination. Place equipment on drop cloths, not the ground. If protective clothing becomes contaminated, decontaminate and rinse immediately. As an extra precaution, you can spread decontaminant on the ground around the UXO to neutralize agent that may have already leaked.
- Begin the RSP if the procedure itself will not spread contamination. If munition and fuze conditions permit, act to limit agent leakage. Place a temporary or permanent plug on the munition unless it means taking unnecessary risk. You may also position the munition so that the leak area is uppermost.
- Return to the CP upon completion of IEP duties or assume the duties of the WP. Performing the RSP and performing contamination control and decontamination are the two main functions of the work party.

WORK PARTY RESPONSIBILITIES

When possible, the WP will complete the RSP for the explosive components before decontamination starts. This will prevent the possibility of a detonation in case of accidental UXO movement. In some cases, the fuze and fuze condition may allow some decontamination while preparing for the RSP. The EOD team leader decides the safest method for the situation. In some cases it may be possible to detonate the UXO in place (for example, a heavily contaminated area or an isolated area). In all cases, the EOD team leader must have concurrence of the on-scene commander or area commander. In-place detonation is not a suitable option for nonhostile situations. After items are rendered safe, the work party will proceed with the leak-sealing, packaging, and disposal operations.

Leak-Sealing

Try to separate nonleakers from leakers, if not already done. Leak-seal (and package) the munitions before they are moved to the disposal area. Packaging is not required for on-site disposal.

If liquid leakage is not visible, move the items to a clean area for further checking and packaging. Decontaminate and rinse the items before making vapor checks. Check items for vapor leaks away from ground contamination and concentrations of decontaminants. Do this by placing the items in plastic bags or placing plastic sheets over them to collect vapors. Allow a few minutes for the vapors to collect before making the check. Nonleaking items require only a check to ensure they are clean for transportation to the EPDS.

If items are leaking, attempt to stop or reduce agent leakage by positioning the items with the leak uppermost. After identifying and controlling leaks, but before detailed leak-sealing or packaging, thoroughly decontaminate the items. TM 60A-1-1-11 details these procedures. Complete leak-sealing before final packaging of an item. There are many different ways to leak-seal the munition; see TM 60A-1-1-11 for details. Before packaging, ensure the seal is holding and that handling has not contaminated the item. Decontaminate and rinse gloves before beginning packaging procedures. Place the item on a clean drop cloth away from obvious contamination.

Packaging and Marking

The first step of the **initial packaging** operation is to make one more vapor check. This is done as follows:

- Place the UXO in a plastic bag and close it temporarily to allow vapor collection. If the UXO is too large for a bag, wrap it in plastic or place it in an airtight container.
- Open the bag or container slightly after 5-10 minutes and recheck. If the check is negative, seal the bag or container.

If, however, the check is positive, it indicates the UXO still has contamination on its surface. In this case, proceed as follows:

- Remove it from the bag or container.
- Inspect the leak seal, and repair it as necessary.
- Repeat decontamination and packaging.

If after two attempts you cannot achieve a negative check, place the item in a second bag and treat the bagged item as a unit. Check the bagged item as the UXO itself was. After achieving a negative check, seal the second bag.

To perform **final packaging** at the site, use a sturdy container that will hold the entire munition and provide a vaportight seal. This reduces the possibility of damaging the seal and plastic bag or spreading contamination on the way to the EPDS. Standard shipping containers and propellant charge cans are examples of suitable containers. Check the container for seal integrity prior to bringing it to the site. When packaging the munition, keep the following in mind:

- Do not use water. This creates a bigger problem for those who unpack the item since the water will have become contaminated too. In addition, the combined weight of the UXO, the water, and the container can make the package unmanageable.
- Package the munition with the leak uppermost, if practical.

- Support the munition in the container using some shock-absorbing material. This prevents movement and damage to the seal.

- Seal the container tightly to prevent vapor leakage.

While at the hot line, clearly **mark** the container with the following information: classification, munition nomenclature, filler, decontaminant used, "This End Up," fuze condition, explosive components, and any other information useful to persons handling the container or disposing of the item. Do final decontamination and checking at the hot line, just before moving the item across.

Post or mark the immediate area around the leaking munition IAW STANAG 2002 and plot it on a situation map. Forward the map to higher headquarters for future cleanup.

Disposal

Preparing for **disposal** is the next step in the chemical accident/incident. After the containers are double checked on the clean side of the hot line and decontaminated as required, take them to the disposal site or designated collection area. AR 75-15 lists the peacetime requirements for transportation and final disposal.

During extensive operations, immediate final disposal may not be feasible. In these situations, use designated collection points within the area of operations. Mark these collection points IAW STANAG 2002. Do not leave CB weapons or classified UXO at collection points without meeting safety and security requirements.

This FM is a guide for disposal procedures; do not use it as authority for the disposal of any quantity of CB agents. The CAIRA officer grants specific authority for disposal of toxic CB agents and UXO before disposal operations are conducted.

Chemical and biological ordnance can be disposed of on the battlefield if it will not increase the contamination of the area and would allow operations to continue immediately. When CB ordnance threatens operations or critical assets, the rendering safe of the ordnance may be required to allow asset recovery or mission continuation. Critical assets or areas that require immediate access may need additional EOD support. TM 60A-1-1-11 cites

methods for disposing of chemical munitions. FM 3-7 cites methods for biological agent disposal.

Personnel conducting disposal operations must wear protective clothing that provides adequate protection against the agents. This protection is required only while actually working with the items. Set up the disposal area without protective clothing if the area is contamination free.

Before selecting the disposal site, consider the following:

- Direction of prevailing winds. Knowing this is important in keeping the vapor cloud from drifting over populated areas.
- Elevation and openness of the terrain. An elevated and open terrain will allow the agent vapor clouds to disperse.
- Distance from any ammunition storage points, inhabited areas, training areas, highways, railroads, and airports. Consider fragmentation hazards as well as agent vapor cloud travel.
- Availability of an area of 60-meter radius cleared of combustibles. Label the area as a restricted area. Fence and post the area for regular usage with both visible and audible warning devices. Establish an exclusion area to prevent unprotected persons from exposure to agent vapors or clouds. Predetermine the size of the area and the amount of agent to be disposed of. Consider a 100 percent dissemination of agent and explosives when computing an exclusion area.
- Other features at the site, such as an aid station. EPDS, fire-fighting equipment, and a bunker or revetment for personnel protection from fragmentation. Also, communications between the disposal site and fire fighting and medical personnel is vital.
- Weather conditions which play an important role in disposal operations. Planners must be aware of the weather factors that affect disposal operations. For further information, see TM 60A-1-1-11.

EMERGENCY PERSONNEL DECONTAMINATION STATION

Personnel and equipment entering and exiting the incident site must take the route least likely to cause exposure or spread contamination. All personnel and equipment returning from a contaminated area must proceed through a decontamination station. The EOD team must prepare to provide its own hasty decontamination or use an EPDS as shown in Figure 7-4 (page 7-15) or in Figure 7-5 (page 7-16). The EOD unit commander may establish an EPDS for limited contamination control and limited decontamination. If NBC support arrives, it sets up a decontamination station or relieves EOD of this requirement. The lack of a decontamination team or EPDS should not delay the IEP response. Decontamination facilities may be set up after the IEP or the WP has begun operations.

The EPDS must be between the CP and the incident site and outside the fragmentation range of the munition. It must be set up in a contamination-free area clear of brush, trees, and other such vegetation. It must be upwind of the incident and at least 50 meters downwind from the CP.

A critical feature of the EPDS is the **hot line**. It is an imaginary line separating the contaminated area from the contamination reduction area. It should be as close to the item as possible but outside its fragmentation radius. All personnel and equipment entering and leaving the incident area must process through the control point on the hot line. If the EOD commander or team leader considers it necessary, a shuffle pit should be established at the hot line.

The **CCL** separates the contamination reduction area from the redress area. Personnel do not cross into the redress area until they have been decontaminated. The CCL also prevents personnel from entering the contamination reduction area without wearing proper protective clothing. Decontaminate everything before crossing the contamination control line.

The EPDS should be protected from the weather, if possible. It must be run by at least one EOD soldier dressed in the proper protective clothing from the time personnel depart for the incident site until all personnel have been processed out.

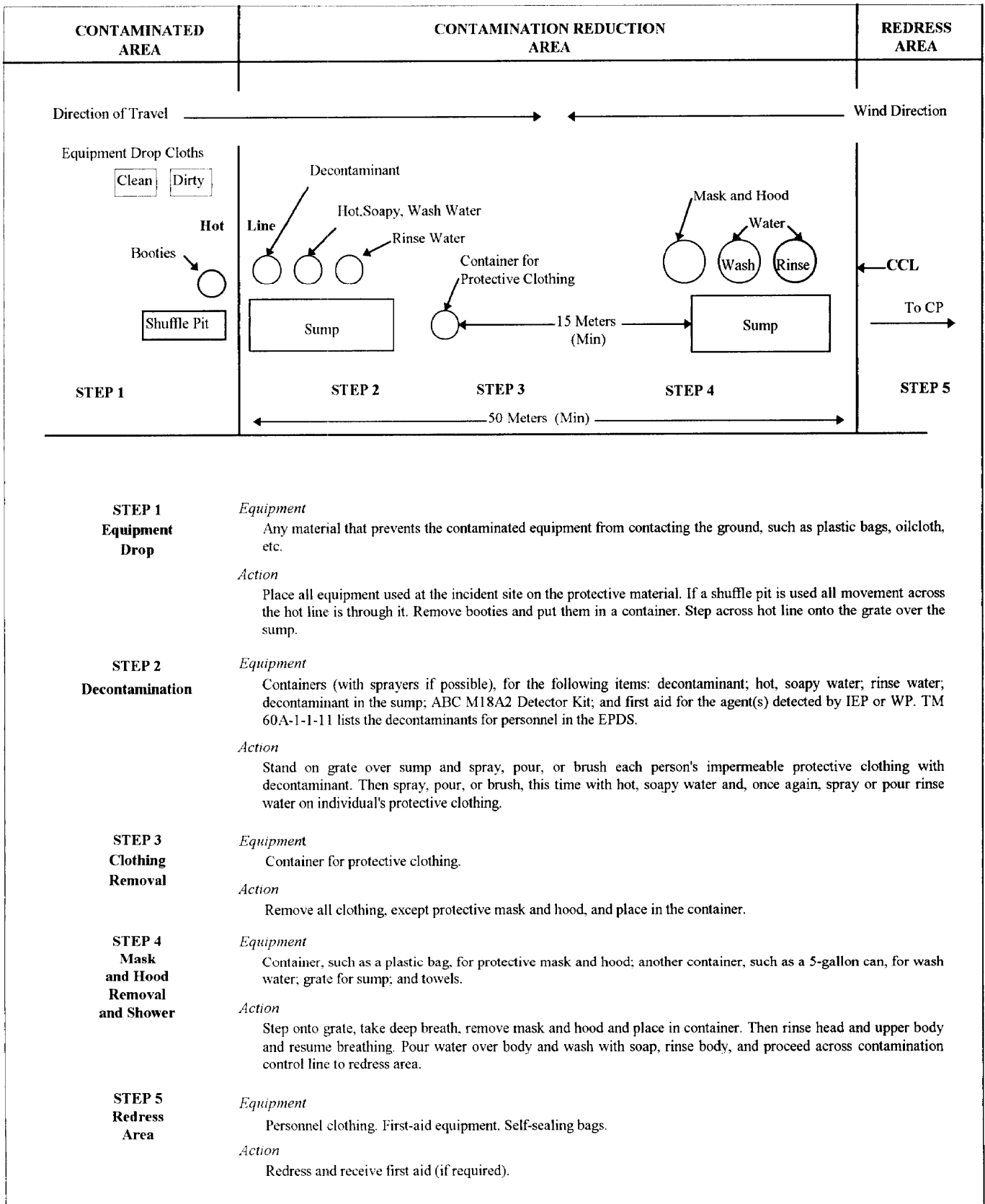


Figure 7-4. Emergency personnel decontamination station

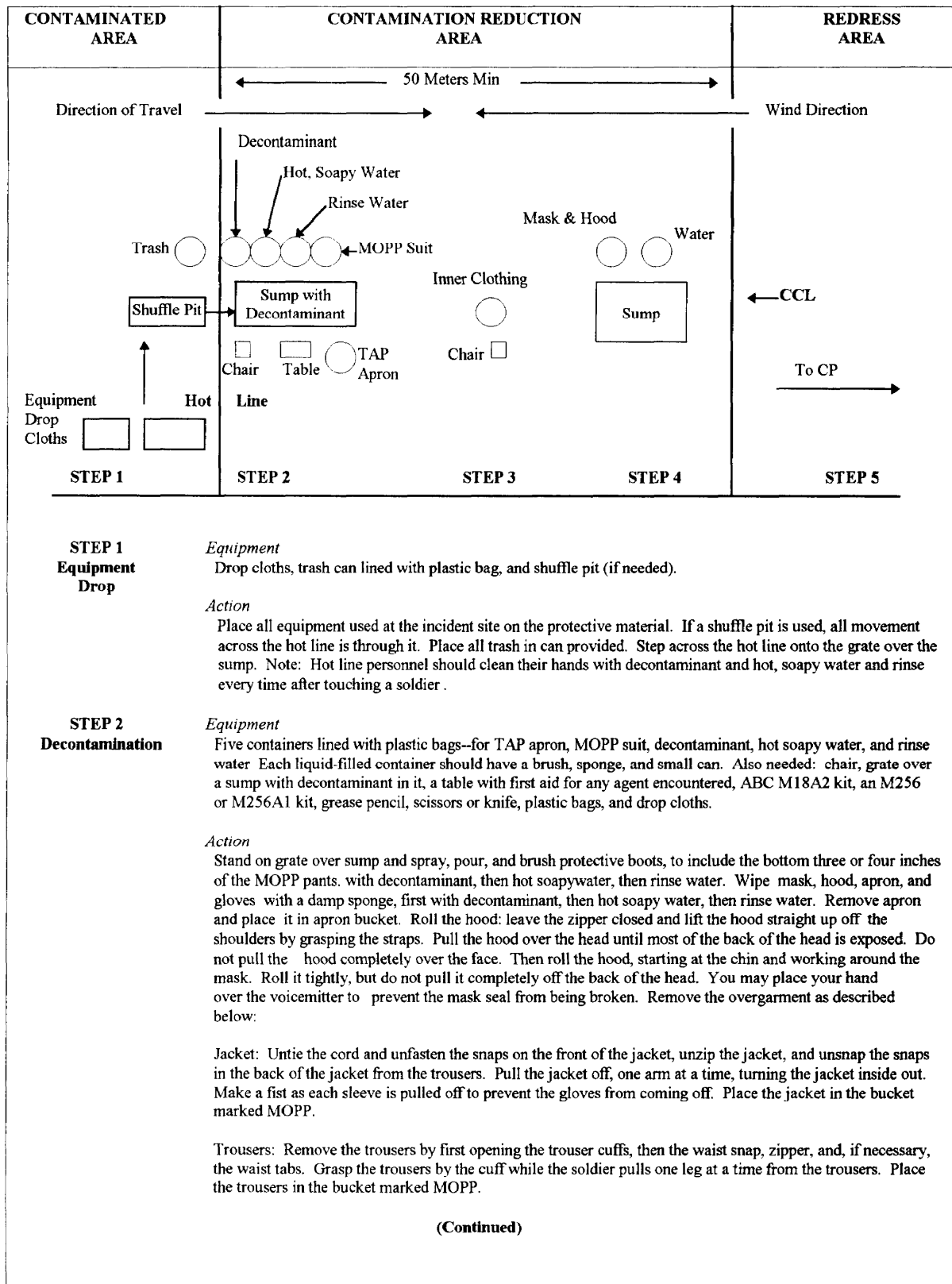


Figure 7-5. Modified EPDS

Step 2 (Continued)

Overboots: Have the soldier sit in a chair at the end of the sump. Untie or cut the strings of the soldier's overboots. Pull them off, one leg at a time (right boot first). As the overboots are removed, the soldier steps on the ground at the end of the sump. Place the overboots in the bucket marked MOPP.

Rubber Gloves: The soldier removes his or her rubber gloves. Hot line personnel will assist so that the soldier does not touch the outside of the gloves. Place the gloves in the bucket marked MOPP. Proceed to inner clothing removal.

**STEP 3
Inner Clothing
Removal**

Equipment

Chair, container for inner clothing (lined with plastic bag), and shower shoes.

Action

Remove all clothing, except protective mask and hood, and place it in the container for inner clothing. Proceed to the shower point.

**STEP 4
Mask
and Hood
Removal
and Shower**

Equipment

Two containers lined with plastic bags--one for mask and hood and the other for wash water. A table with towels and soap.

Action

Step onto grate, take a deep breath, remove mask and hood, and place them in the container. Then rinse head and upper body and resume breathing. Pour water over body and wash with soap. Rinse body and proceed across contamination control line to the redress area.

**STEP 5
Redress
Area**

Equipment

Redress kit, first aid equipment, litter.

Action

Redress and receive first aid (if required).

Figure 7-5. Modified EPDS (continued)

The contamination reduction area may be contaminated by personnel returning from the incident area. Therefore, once decontamination operations begin, the contamination reduction area is considered contaminated. Make all efforts to control the spread of this contamination.

Upon completion of work at the site, decontaminate all exposed personnel. The extent and scope of the decontamination will depend upon the size and scope of the operation. The decontamination for a three-man team is much less elaborate than for an entire company. Follow the EPDS fundamentals (explained later) regardless of unit size.

How you arrange the EPDS will depend on the amount of agent involved, the scope of the operation, and the terrain. Plan the EPDS to meet these requirements. Ensure personnel follow these four principles when using the EPDS:

- Move into the wind as undressing progresses.
- Decontaminate and remove the most heavily contaminated items of clothing first.

- Remove all articles of clothing worn at the incident site.
- Remove the mask and hood last before washing.

The EOD company should decontaminate as much of its own personnel protection items and mission-essential equipment as it can. Support personnel should decontaminate both the land in the area and nonessential equipment. When finished, EOD must mark the contaminated area of the EPDS for further decontamination.

The operation of the EPDS should be turned over to an NBC team on its arrival. If EOD operations are completed before the NBC team arrives, team members and other personnel should go through the EPDS. The hot line team must be prepared to turn over the operation to the incoming decontamination team (part of the NBC team). The contamination reduction area must be marked with contamination markers until the area is decontaminated (see Appendix B).