FM 3-05.132 (FM 3-05.105)

Army Special Operations Forces Chemical, Biological, Radiological, and Nuclear Operations

August 2007

DISTRIBUTION RESTRICTION: Distribution authorized to U.S. Government agencies and their contractors only to protect technical or operational information from automatic dissemination under the International Exchange Program or by other means. This determination was made on 2 July 2007. Other requests for this document must be referred to Commander, United States Army John F. Kennedy Special Warfare Center and School, ATTN: AOJK-DTD-JA, Fort Bragg, NC 28310-9610, or by e-mail to JAComments@soc.mil.

DESTRUCTION NOTICE: Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

FOREIGN DISCLOSURE RESTRICTION (FD 6): This publication has been reviewed by the product developers in coordination with the United States Army John F. Kennedy Special Warfare Center and School foreign disclosure authority. This product is releasable to students from foreign countries on a case-by-case basis only.

Headquarters, Department of the Army

This publication is available at Army Knowledge Online <www.us.army.mil> and the General Dennis J. Reimer Training and Doctrine Digital Library at <www.train.army.mil>.

***FM 3-05.132 (3-05.105)**

Field Manual
No. 3-05.132 (3-05.105)

Headquarters
Department of the Army
Washington, DC, 31 August 2007

Army Special Operations Forces Chemical, Biological, Radiological, and Nuclear Operations

Contents

DISTRIBUTION RESTRICTION: Distribution authorized to U.S. Government agencies and their contractors only to protect technical or operational information from automatic dissemination under the International Exchange Program or by other means. This determination was made on 2 July 2007. Other requests for this document must be referred to Commander, United States Army John F. Kennedy Special Warfare Center and School, ATTN: AOJK-DTD-JA, Fort Bragg, NC 28310-9610, or by e-mail to JAComments@soc.mil.

DESTRUCTION NOTICE: Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

FOREIGN DISCLOSURE RESTRICTION (FD 6): This publication has been reviewed by the product developers in coordination with the United States Army John F. Kennedy Special Warfare Center and School foreign disclosure authority. This product is releasable to students from foreign countries on a case-by-case basis only.

***This publication supersedes FM 3-05.105, 28 September 2001.**

Figures

Tables

Preface

Field Manual (FM) 3-05.132 is an Army special operations forces (ARSOF) Tier 2 publication. The acronym ARSOF represents Special Forces (SF), Rangers (RGR), special operations aviation (SOA), Psychological Operations (PSYOP), and Civil Affairs (CA)—all supported by the Sustainment Brigade (Special Operations) (Airborne) (SB[SO][A]).

PURPOSE

FM 3-05.132, *ARSOF Chemical, Biological, Radiological, and Nuclear (CBRN) Operations*, revises and replaces FM 3-05.105, *ARSOF in a Nuclear, Biological, and Chemical (NBC) Environment*. This new manual serves as a reference document for ARSOF commanders and staff, training developers, and doctrine developers throughout the United States Army Special Operations Command (USASOC). It provides commanders with doctrinal considerations for organizing their individual CBRN operations and putting them into action to accomplish missions.

SCOPE

This publication describes ARSOF CBRN missions and tasks for the chemical reconnaissance detachment (CRD), chemical decontamination detachments (CDDs), ARSOF CBRN reconnaissance and survey operations, decontamination and reconnaissance teams (DRTs), ARSOF sensitive site exploitation (SSE), and reachback capability. This publication provides a basis for understanding the requirements of individual special operations forces (SOF) personnel operating in CBRN environments, as well as the requirements of ARSOF staff planners across the range of military operations. The manual also provides guidance for commanders who determine force structure, equipment, material, and operational requirements necessary to conduct SOF CBRN missions herein described.

APPLICABILITY

FM 3-05.132 provides CBRN mission guidance to the CRD, CDD, and DRT commanders, and all CBRN personnel throughout ARSOF. This manual gives ARSOF commanders and staffs a capabilities manual of what the new assets can provide ARSOF in the CBRN environment. FM 3-05.132 also functions as a reference document for training and doctrine developers throughout USASOC.

This publication applies to the Active Army, Army National Guard (ARNG)/Army National Guard of the United States, and United States Army Reserve (USAR) unless otherwise stated.

ADMINISTRATIVE INFORMATION

This manual is unclassified to ensure Armywide dissemination and to facilitate the integration of ARSOF in the preparation and execution of campaigns and major operations. Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men. The proponent of this manual is the United States Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS). Submit comments and recommended changes to Commander, USAJFKSWCS, ATTN: AOJK-DTD-JA, Fort Bragg, NC 28310-9610, or by e-mail to JAComments@soc.mil.

Chapter 1
Introduction

This chapter provides a defensive “how to” guide for ARSOF personnel and planners who prepare for and conduct operations in CBRN-contaminated environments. It serves to familiarize conventional staffs with the dynamics of SOF operational support. It describes tactics, techniques, procedures, and capabilities tailored to the CBRN dimension in special operations (SO) missions and activities.

SOF CBRN MISSION

1-1. The United States Special Operations Command (USSOCOM) combatant commander (CCDR) recognizes the probability of operating in a CBRN environment exists; therefore, SOF must specifically organize, train, and equip to be successful. The term CBRN environment includes the deliberate, accidental employment, or threat of CBRN weapons and attacks with CBRN or toxic industrial materials (TIMs). The mission of SOF CBRN forces is to provide CBRN reconnaissance and surveillance support for SOF in support of strategic, operational, and tactical objectives in all environments (permissive, uncertain, and hostile) to support the geographic and functional CCDRs’ intent and objectives. This section describes the SO core tasks and some examples of situations that can confront planners and personnel conducting SO missions in a CBRN environment.

COUNTERPROLIFERATION OF WEAPONS OF MASS DESTRUCTION

1-2. Counterproliferation (CP) refers to the activities of the Department of Defense (DOD) across the full range of U.S. Government (USG) efforts to combat proliferation. This application of military power to protect U.S. forces and interests includes intelligence collection and analysis, support to diplomacy, arms control, and export controls should the forces confront an adversary armed with weapons of mass destruction (WMD). This military power may include actions taken to seize, destroy, render safe, capture, or recover WMD. WMD are capable of destroying large numbers of people. The mere presence of these weapons could produce an intentional or unintentional CBRN-operating environment. If directed, SOF can conduct or support direct action (DA), special reconnaissance (SR), counterterrorism (CT), and information operations (IO) missions to deter or prevent the acquisition of WMD, neutralize proliferation where it has occurred, and operate against the threats by WMD to defeat them. ARSOF are tasked with organizing, training, equipping, and otherwise preparing to conduct operations in support of USG CP objectives. Specific CP activities are classified and beyond the scope of this manual. For additional information on CP of WMD, refer to Joint Publication (JP) 3-0, *Doctrine for Joint Operations.*

COUNTERTERRORISM

1-3. CT operations include the offensive measures taken to prevent, deter, preempt, and respond to terrorism. ARSOF possess the capability to conduct these operations in an environment that may be denied to conventional forces because of political or threat conditions. Host nation (HN) responsibilities, Department of Justice and Department of State lead agency authority, legal and political restrictions, and appropriate DOD directives limit ARSOF involvement in CT. An ARSOF unit’s role and added capability is to conduct offensive measures within DOD’s overall CT efforts. ARSOF units conduct CT missions as SO by covert, clandestine, or low-visibility means. When conducting CT missions, ARSOF may encounter CBRN materials. Contingency plans should include decontaminating ARSOF, sensitive materials, or hostages recovered; rendering CBRN weapons safe; and exfiltrating contaminated casualties, both enemy and friendly.

FOREIGN INTERNAL DEFENSE

1-4. Foreign internal defense (FID) is the participation by civilian and military agencies of a government in any of the action programs taken by another government to free and protect its society from subversion, lawlessness, and insurgency. The primary contribution of SOF in this interagency activity is to organize, train, advise, and assist HN military and paramilitary forces. Should a CBRN threat exist, training provided could cover basic masking techniques for protection against riot control agents (RCAs) to full individual protective equipment (IPE). By training HN forces on CBRN defense, SOF contribute to the deterrence of an adversary's use of CBRN weapons. During the Gulf War, in Operation DESERT SHIELD, SOF were involved in CBRN defense technique training and the equipping of Saudi Arabian HN personnel and other coalition forces. A FID program in a CBRN environment requires additional operational and logistic planning factors beyond those normally considered in a non-CBRN environment. For further information on FID, refer to FM 3-05.202, *Special Forces Foreign Internal Defense Operations,* and JP 3-07.1, *Joint Tactics, Techniques, and Procedures (TTP) for Foreign Internal Defense (FID).*

SPECIAL RECONNAISSANCE

1-5. SR missions include reconnaissance and surveillance actions conducted by SOF to obtain or verify, by visual observation or other collection methods, information concerning the capabilities, intentions, and activities of actual or potential enemies. Highly developed capabilities of access to denied and hostile areas, worldwide communications, and specialized air/naval platforms with sensors enable SOF to conduct SR against operational and strategic targets beyond the range of conventional reconnaissance forces. SR includes CBRN reconnaissance, area assessment, environmental (hydrographic, geological, and meteorological) reconnaissance, coastal patrol and interdiction, target and threat assessment, and poststrike reconnaissance. In addition to reconnaissance and surveillance, SR overt information collection may be conducted to determine the need for, or viability of, contemplated operations. The following scenario explains considerations that can affect SR conducted in a CBRN environment. For further information on SR, refer to FM 3-05.204, *Special Forces Special Reconnaissance Tactics, Techniques, and Procedures,* and JP 3-05, *Doctrine for Joint Special Operations*.

Example Scenario

An Army SF team, conducting SR from two hide sites and a mission support site, is tasked to perform point detection as a means of standoff detection for a conventional force. All three sites show positive readings for chemical contamination and, in all probability, the team will begin showing effects of contamination which, if left untreated, may result in death. The joint special operations task force (JSOTF) commander must determine whether to keep the team in place until linkup or extract them, possibly compromising U.S. intentions and alerting the enemy as to the depth of SOF operations in the enemy rear area. If the team is to be extracted, critical decisions must be made regarding a clean aircraft picking up contaminated team members.

DIRECT ACTION

1-6. These missions are short-duration strikes and other small-scale offensive surgical actions by SOF- or SO-capable units to seize, destroy, capture, recover, or inflict damage on designated personnel or materiel. DA missions include raids; ambushes and direct assaults; standoff attacks; terminal guidance operations; precision destruction operations; recovery operations (including noncombatant evacuation); and antisurface, mine, and amphibious warfare. When conducting DA against an adversary's CBRN capabilities, ARSOF must consider the collateral effects of the strike. These collateral effects may cause CBRN hazards that could affect SOF operating in the area. An example of a DA mission conducted in a CBRN environment follows. For further information on DA, refer to FM 3-05, *Army Special Operations Forces*.

Example Scenario

As part of a noncombatant evacuation operation (NEO), SOF elements are sent to evacuate American citizens from a remote location in the vicinity of a chemical plant. Local nationals set the plant ablaze, spreading chemical toxins over the area, and possibly contaminating the American citizens. The JSOTF commander must contend with the mission complications of contamination by TIMs, SOF aircraft entering contaminated areas to pick up American citizens who have no personal CBRN protective equipment, and resultant casualties.

PSYCHOLOGICAL OPERATIONS

1-7. PSYOP are planned missions to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals. The fear of the horrific capability of CBRN weapons can cause panic in many groups. PSYOP personnel can educate and reduce fears in friendly populations, influence neutral nations, and be turned against hostile nations threatening use of CBRN weapons. An example of PSYOP conducted in support of CBRN defense operations follows. For further information on PSYOP, refer to FM 3-05.30, *Psychological Operations*.

Example Scenario

The United States, as part of a multinational force, deploys a joint task force (JTF) to a friendly country to compel a regional dictator to withdraw from illegally occupied territory. The dictator threatens use of chemical and biological weapons against the friendly country, multinational force, and a neutral country in the region. The JTF and multinational force develop coordinated and integrated PSYOP programs directed at multiple target audiences. One theme is directed to the civilian populations of the friendly and neutral countries to prepare them for a possible CBRN attack and the likelihood of a strong retaliation, and provides specific examples of consequences.

CIVIL AFFAIRS OPERATIONS

1-8. A commander has an inherent responsibility to establish and maintain effective relations between military forces, civil authorities, the general population, resource providers, nongovernmental organizations (NGOs), and institutions in friendly, neutral, or hostile areas where military forces are employed. The conduct of such relations is called civil-military operations (CMO). Properly executed CMO can reduce potential friction points between the civilian population and the joint force, specifically by eliminating civilian interference with military operations. Use of CA forces and units specifically organized, trained, and equipped to conduct Civil Affairs operations (CAO) activities in support of CMO can assist the commander in dealing with civilians affected by CBRN environments. The following is an example of CMO conducted in a CBRN environment. For further information on CA, refer to JP 3-57, *Joint Doctrine for Civil-Military Operations*; FM 3-05.40, *Civil Affairs Operations*; and FM 3-05.

Example Scenario

A joint force commander (JFC) is preparing to conduct joint urban operations in support of an HN against an external neighboring adversary who recently captured and occupied a strategic HN port city. A fanatical religious terrorist organization, traditionally supported by the external adversary, is active in this city. The terrorists claim to have biological agents and threaten release against the city's population if the HN and JFC retake the city. The JFC directs his CA forces to assist HN officials evaluate HN capabilities and to enhance mitigation of the threat if carried out. CA generalists assess anticipated requirements and realistic HN capabilities, to include evacuation and transportation routes that will not interfere with military operations.

> CA specialists work with HN civil defense, medical, and public health counterparts to develop and implement a coordinated emergency civil response plan. CA personnel set up a CMO center to coordinate support for the HN from NGOs, international organizations, and the United Nations, all of whom have offered help. CA and HN officials coordinate closely with PSYOP, public affairs (PA), and other public information agencies to provide factual information and rumor control.

UNCONVENTIONAL WARFARE

1-9. Unconventional warfare (UW) is operations conducted by, with, or through irregular forces in support of a resistance movement, an insurgency, or conventional military operations. UW operations can be conducted across the range of military operations against regular and irregular forces. These forces may or may not be State-sponsored. UW includes guerrilla warfare, subversion, sabotage, intelligence activities, evasion and escape, the use of surrogates, and the implementation of UW operations against non-State actors. These aspects are important for ARSOF to meet emerging threats. UW is complicated by the presence of CBRN weapons. Proficient in local languages, SOF assist indigenous forces with combat skills training, CBRN defense training, intelligence, communications, PSYOP, civic action projects, and medical support. Working in these activities can either be conducted in support of conventional forces, acting as a force multiplier in an integrated theater campaign, or as part of a stand-alone unconventional operation. However, regardless of the manner in which UW is conducted, the threat or active use of CBRN weapons can further complicate normal operational and logistic sustainment factors, as well as uncover cultural fears never before actualized. Examples of UW conducted in a CBRN environment follow. For additional UW information, refer to FM 3-05.201, *Special Forces Unconventional Warfare Operations*

> **Example Scenarios**
>
> 1. An SF team is preparing for insertion and linkup with an indigenous force not possessing CBRN defensive equipment. Because the hostile government recently used chemicals against portions of the rebellious indigenous population, the USG decides to equip the force with IPE. A command logistics and training problem confronts the SF team when the supported indigenous force demands CBRN protection for their families located within the camp and a nearby city.
>
> 2. The USG decides to inoculate the supported indigenous force and their families against a biological hazard. As word spreads that the SF team has inoculated the force and their families, large numbers of other indigenous personnel arrive at the clandestine base pleading for inoculation.

SUPPORT TO INFORMATION OPERATIONS

1-10. IO are a means to support the objectives of the national security strategy by enhancing decision superiority and by influencing foreign perceptions. ARSOF units continuously conduct IO as part of daily operations to achieve information dominance and national security objectives. SOF implementation of IO allows them to attain a relative advantage in the information environment which, in turn, shifts the central focus from predominately SOF operations using DA to obtaining information dominance.

1-11. IO involve actions taken to affect adversary information and information systems while defending one's own information and information systems. IO apply across all phases of an operation and at every level of war. Defensive IO activities are conducted on a continuous basis and are an inherent part of force employment across the range of military operations. IO may involve complex legal and policy issues requiring careful review and national-level coordination and approval.

1-12. All SOF core tasks may employ IO tasks. Likewise, all SOF missions may be supported through the employment of IO capabilities. The increasing requirement for SOF to participate in military engagements, security cooperation, deterrence, crisis-response contingencies, major operations, and campaigns is based upon inherent capabilities that may be used in peacetime to deter a crisis, control crisis escalation, project power, or promote peace. An adversary's nodes, links, human factors, weapon systems, and data are particularly lucrative targets, capable of being affected through the use of lethal and nonlethal applications of coordinated SOF IO capabilities.

1-13. SOF IO plans support regional and transnational security objectives in coordination with, and complementary to, other USG activities as part of an overarching political-military strategy. SOF IO effectiveness is greatest during times of peace when SOF are in a premium position to assist in deterring the eruption of violent conflicts or the development, transport, and use of CBRN weapons. IO may influence and shape perceptions or intent of target audiences, offering an alternative to lethal solutions.

1-14. The unique capabilities of SO enable the JSOTF to support the JFC by accessing, altering, degrading, delaying, disrupting, denying, or destroying adversary information systems throughout the full range of SO. Synchronization of SO tactical and operational theater-level IO activities in concert with other DOD and national agencies significantly enhances SO IO effectiveness on a strategic level. SO PSYOP and CA further assist in managing foreign perceptions, particularly regarding CBRN threats requiring a continuous effort that spans peace, crisis, and conflict.

1-15. Mature SOF IO capabilities, consisting of both offensive and defensive measures, provide force protection (FP) for SOF that may be required to operate in high-threat or high-risk CBRN environments. Information protection is a prerequisite for SOF units' FP and achieving decision superiority and mitigating CBRN threats.

ARSOF IMPERATIVES

1-16. This FM is in accordance with (IAW) the ARSOF imperatives (Figure 1-1). SOF commanders and Soldiers must incorporate these imperatives into their exercise planning and implementation if they are to be effective during mission execution. Soldiers will fight as they have been trained. Additional information on ARSOF imperatives is contained in FM 3-05.

- Understand the operational environment.
- Recognize political implications.
- Facilitate interagency activities.
- Engage the threat discriminately.
- Consider long-term effects.
- Ensure legitimacy and credibility of SO.
- Anticipate and control psychological effects.
- Apply capabilities indirectly.
- Develop multiple options.
- Ensure long-term sustainment.
- Provide sufficient intelligence.
- Balance security and synchronization.

Figure 1-1. ARSOF imperatives

OPERATIONAL SPECTRUM

1-17. Where proliferation has occurred in regions of potential conflict, deterrence of an adversary's CBRN weapons employment is a principal U.S. national objective. USASOC trains and prepares forces to meet the requirements for planned, contingency, and unexpected (but plausible) operations in CBRN environments in the geographic combatant commander's (GCC's) area of responsibility (AOR). A CRD provides the GCCs and SOF commanders with an effective, deep CBRN strategic-reconnaissance capability to detect and assess WMD in any environment.

1-18. This proliferation of CBRN weapons places an increased reliance on intelligence-collection efforts. The evidence from such efforts defines the threat capability to develop, produce, stockpile, and employ CBRN weapons. U.S. foreign policy decisions and initiatives depend heavily on the evidence of using (or preparing to use) CBRN weapons in conflicts not directly involving the United States.

1-19. SOF are deployed worldwide across the range of military operations in peace and war. Since the 1960s, the United States has dealt with a series of asymmetric threats that have increased in lethality exponentially over time. The evolution of terrorism has shown trends over time that evolved conventional Cold War threats into asymmetric threats. Foreign terrorism continues to be active against U.S. targets overseas. This activity mandates allocating additional resources to combat asymmetrical threats and protect U.S. national interests.

1-20. Emerging asymmetric threats (such as WMD) challenge the safety of this nation and its coalition partners. In response to these emerging threats, U.S. forces must be capable of conducting special CBRN reconnaissance activities to provide security assistance and support to interagency or joint operations; FID, UW, and CT operations; and CP of WMD.

1-21. CRDs are assigned to a Special Forces group (airborne) (SFG[A]). These groups are regionally oriented to each GCC in various regions around the world. This alignment allows each CRD to conduct area studies of its assigned AOR. All CRDs, regardless of alignment, are capable of being task-organized under any special operations task force (SOTF). Using a CRD in its targeted AOR increases its effectiveness.

ARSOF OPERATING ENVIRONMENTS AND POTENTIAL CBRN THREATS

> *CBRN warfare is not a separate, special form of war, but instead a battlefield condition just like rain, snow, darkness, electronic warfare, heat and so on. Units must train to accomplish their wartime missions under all battlefield conditions. Whenever CBRN is separated from other training events, we condition our Soldiers to regard operations under CBRN conditions as a separate form of warfare.*
>
> Officer's comment during chemical training, SOLID SHIELD '87
> Army Chemical Review, January 1988

1-22. CBRN weapons and hazards can directly influence the operational environment in which ARSOF operate. The most notable influences of the physical environment are weather and terrain. Weather conditions are the "uncontrollable wild card" of CBRN employment and provide useful clues to probable times and places for CBRN use (for example, employment windows). Diligent tracking of weather conditions aids in the assessment of risks to SOF from CBRN weapons, as well as TIM hazards. In concert with weather conditions, the terrain influences where CBRN effects may concentrate (for example, chemical agents in low-lying areas) and in many cases, it influences enemy CBRN targeting, such as exploiting or creating chokepoints. The AORs in which SOF operate may contain several environments, each with a distinct set of CBRN planning factors and considerations.

URBAN AREAS

1-23. Urban structures such as sewers, storm drains, reinforced concrete buildings, subways, and basements can protect against spray attacks of chemical or biological agents and the effects of nuclear blast and radiation. However, this exchange for overhead cover creates other problems. Chemical agents tend to act differently in urban areas and will tend to collect in low areas; nonpersistent agents may enter buildings or seep into piles of rubble. ARSOF personnel should avoid these low areas. Also, SOF personnel should attempt to shut down ventilation systems in urban structures to prevent the spread of vapor or aerosol hazards. The persistency of an agent can greatly increase when it has settled in these areas. Once an attack has occurred, detection of chemical contamination becomes very important. Personnel must thoroughly check areas before attempting to occupy or traverse them.

1-24. The stable environment of an urban area may increase the persistency of live biological agents and the effectiveness of toxins. Existing food and water supplies are prime targets for biological agents. Personal hygiene becomes very important. Leaders must establish and consistently enforce sanitary and personal hygiene measures, including immunizations. They must also ensure that all personnel drink safe water and never assume that any local water is safe.

1-25. The population density of an urban area must be considered. During planning, the potential of encountering a large number of contaminated, panicked, injured, and dying people must be considered. Urban areas can be susceptible to an adversary's use of TIMs as a weapon, especially if there is a sizable chemical industry or storage facilities associated with the area. SOF should be aware of potential hazardous materials (HAZMAT) they may encounter. For additional information, see FM 3-11.4, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection.*

DESERT AREAS

1-26. Desert operations may present additional problems. Desert daytime temperatures can vary from 90° Fahrenheit (F) to 125°F resulting in unstable temperature gradients that are not particularly favorable to chemical or biological (CB) attacks. Evaporation of chemical agents during the day will rapidly create a downwind hazard and an inhalation problem. However, with nightfall, the desert cools rapidly, and a stable temperature gradient occurs, creating the possibility of night or early morning attacks. FM 3-11.4 provides further information.

LOW-TERRAIN, TEMPERATE ZONE AREAS

1-27. An adversary's use of CB or TIMs can be effective in this environment when forces are not prepared. These weapons (nonpersistent) are more efficient when used at night and during periods of inversion conditions. Terrain features, such as tall grass or scrub brush, have the tendency to retard the flow of an agent cloud, thus reducing the overall size of the contamination. Also, the grass and brush may absorb the chemical agent, which would not pose a significant effect on the mission. However, movement through the area requires care, as the absorbed agent may be released when the vegetation is disturbed or crushed, creating a secondary toxic hazard. Persistent agents can cling to vegetation, creating surface exposure and an off-gassing during daylight. TIMs, such as chlorine, may tend to meander, as would a fog.

1-28. Movement of a biological aerosol over grass and brush reduces the concentration as the particles impact on vegetation and settle out of the air. However, the cover provided by vegetation protects the biological agent from the weather and, thus, favors the agent's survivability, specifically the wet aerosols. FM 3-6, *Field Behavior of Chemical, Biological, Radiological, and Nuclear Agents*, provides additional information.

MOUNTAIN AREAS

1-29. Terrain and weather in mountainous areas magnify the requirement for a high degree of CBRN defense preparedness. Rugged terrain limits the employment of large forces, reduces maneuver, and impedes logistical support. Shelters are difficult to dig and may require improvisation using existing rocks, snow, and timber. However, this same terrain may also provide caves, ravines, and cliffs as a natural source of protection.

1-30. Chemical agents are heavier than air and will settle in valleys and depressions. Subject to mountain breezes, agents will move down and within the valley. Thus, high dosages are less likely on crests or sides of ridges or hills.

1-31. Radiation contamination will be erratic due to rapid changes in wind patterns, but at the same time, the range of thermal effect increases with the clarity of mountain air. The location of hot spots may be erratic. Additionally, a nuclear blast can produce rock and snow slides.

JUNGLE AREAS

1-32. Tropical climates require the highest degree of individual discipline and conditioning to maintain effective CBRN defensive readiness. Leaders and staff planners must expect and plan for a rapid decrease in unit efficiency. They also must anticipate heat casualties. Strict adherence to field sanitation is necessary. In addition, they must ensure that special precautions are taken to maintain unit CBRN defense equipment in usable condition. The rapid mildew, dry rot, and rust inherent in jungle areas necessitate this requirement.

1-33. Dominant climatic features of jungle areas are high, constant temperatures, heavy rainfall, and very high humidity. These features increase the survivability of biological agents. In thick jungle there is usually little or no wind, and the canopy blocks most of the sunlight from the ground, thus providing excellent conditions for adversary use of biological agents and toxins. The same canopy that may provide slight shielding from radiation may also enhance blast effect with tree blow-downs and projectiles. Also, a lack of penetrating wind may result in decreased downwind hazards.

1-34. A jungle canopy creates good overhead cover from aircraft spray. However, persistent agents delivered by artillery or bombs may penetrate the canopy before being released, thus creating a hazard in the immediate area of impact. Additionally, rains can wash radiation into water collection areas, producing hot spots.

COLD-WEATHER REGIONS

1-35. Cold-weather conditions create many added problems in CBRN defense. During the winter months, 45 percent of the North American landmass and 65 percent of the Eurasian landmass are characterized by extreme cold and deep snow. These areas include Korea, China, Bosnia, Kosovo, Russia, Ukraine, Kazakhstan, and the United States. The former Soviet Union developed procedures to weaponize a series of agents to be effective in extreme cold weather. Some of those agents do not have known freezing points. In temperatures from –20°F to –40°F, agents such as Sarin (GB) become like a thickened Soman (GD). Choking agents have increased persistency from 0°F to –40°F. Even hydrogen cyanide (AC), which solidifies at –14°F, can be disseminated as fine particles, thereby increasing its effective time and threat. Mustard agents employed through pyrotechnic devices create effective vapor hazards far below the freezing point of mustard.

1-36. Most decontaminants have reduced effectiveness at temperatures below 0°F. In field conditions, decontaminant effectiveness would be reduced due to impurities in agents and decontaminants. Present detection technology is not effective in cold environments. An agent must be in liquid or vapor form and in significant quantities to be detected by currently available equipment. In cold environments, agents may be undetectable, yet still be hazardous.

1-37. Frozen contamination must be prevented from being tracked into a warm area, such as a tent, heating to form a vapor and then producing a deadly off-gassing hazard. Agents mixed with frozen water can adhere to protective clothing, thereby preventing removal of the hazard. These hazards may occur as temperatures increase from night to day and decrease from day to night. Personnel should consider special precautions and actions when conducting cold-weather chemical decontamination (Figure 1-2, page 1-9).

1-38. The use of nuclear weapons in arctic conditions can increase the effects and potential casualties at greater distances from ground zero (GZ). Personnel should be aware of potential snow blindness and burns, avalanches as far as 30 kilometers (km) from GZ, quick thaws and freezes, and frozen material or snow storms. In cold temperatures, biological agents are more persistent. FM 3-11.4 and TC 3-10, *Commander's Tactical NBC Handbook*, provide additional information.

- Whenever possible, conduct detailed troop decontamination (DTD) in a warm tent; gross contamination must be removed prior to DTD.
- Provide warming tents for contaminated Soldiers working on the decontamination line.
- Place chemical agent alarms in all warming tents. In most cases, the alarms will not detect contamination outside.
- Drain all decontamination equipment of water during storage to prevent water freezing and damaging the equipment.
- Minimize digging because it increases the risk of vapor hazards. Contaminants may be trapped in frozen layers below the surface. When Soldiers dig, the layer becomes exposed to the surface, where the temperature creates a different vapor pressure. The change in vapor pressure may create a new hazard.
- Check a core snow sample when entering a new assembly area. Contaminants can become occluded in snow and ice. This makes detection difficult and may increase the spread of contamination. Snow may drift for miles.
- Take samples of snow from several layers by digging in a few areas. Contaminants may be trapped in a layer beneath the surface.
- Test the snow with detection paper—M8 or M9 paper.
- If possible, warm the snow to a liquid and test it with a chemical agent monitor (CAM).
- Ensure personnel understand that mission-oriented protective posture (MOPP) does not prevent cold-weather injuries.

Figure 1-2. Special precautions

MARITIME ENVIRONMENTS AND RIVERINE AREAS

1-39. ARSOF operating in maritime environments have the potential of encountering chemical, biological, or radiological attacks from the shoreline. However, a chemical attack is considered the most likely. Delivery of a nonpersistent chemical agent, in favorable climatic conditions, is no different across open water from that of low, rolling terrain. The effects of wind and heavy surf tend to disperse a chemical cloud. Direct use of persistent agents against deploying forces is not considered feasible, but contamination of a beach would provide a formidable barrier. Mustard agents can remain for extended periods of time on the surface of the water. Surface vessels operating in support of SOF risk being attacked by artillery, missile, or air depending on their offshore location. The feasibility of using biological agents, except against large targets, is low. However, radiological contamination as a barrier should be considered in any plan.

1-40. Operations on and around rivers present situations that have a potential to disrupt operations. Using both persistent and nonpersistent agents will require ARSOF to establish MOPP levels that could degrade personnel effectiveness. During inversion climatic conditions, nonpersistent chemical agent clouds have the tendency to follow a river's path when channeled by the high grass and brush along the banks. Persistent agents could be used to contaminate the riverbanks. Refer to FM 3-6 for additional information.

ATMOSPHERIC ENVIRONMENTS

1-41. ARSOF planning that involves aviation assets should consider the possibility of both external and internal aircraft contamination. The following primary regimes need to be considered:

- *Operating/Staging Bases.* The possibility of CBRN use against airfields where SOF aviation assets are operating should always be considered. Airfields are typically wide open and have well-known, publicly available, and highly accurate coordinates, making them easy to target. To minimize the effects of CBRN attacks, SOF personnel, aircraft, supplies, and support assets should be dispersed and covered (situation permitting). The typically clear, wide-open nature of most airfields will allow nonpersistent chemical agents to disperse quickly. Assets should be protected against CBRN contaminants that adhere to surfaces, because covering allows quick reuse after an attack.

- *En Route.* The likelihood of CBRN contamination while airborne is remote, with the odds decreasing as altitude increases. However, increasing altitude increases the risks of detection by threat systems, and must be weighed against mission requirements. Flying through rain and clouds increases the possibility of partial decontamination to outside surfaces when transiting to and from objective areas.
- *Objective Area of Operation (AO).* The greatest potential for contamination is during objective AO—infiltration/exfiltration, airdrop, or other operations that require SOF aircraft to operate in close proximity to the ground. The aircraft will typically be opened up, increasing the possibility of internal aircraft contamination from the effects of CBRN agents, the blast from propellers and rotors, and contaminated personnel and equipment requiring infiltration or exfiltration. SOF aircrews must be prepared to operate in a CBRN environment and anticipate the additional requirements of passengers during missions. The decision to send aircraft into situations where they will likely become internally contaminated should carefully consider the inability to effectively decontaminate aircraft in a timely manner; doing so will likely require the aircraft to be maintained and flown in a "dirty" condition.

CHEMICAL AGENTS

1-42. Chemical warfare (CW) agents produce both immediate and delayed effects that will degrade operations through lethal, incapacitating, or other damaging effects to individuals as well as contamination of equipment, supplies, and critical terrain features. The types of CW agents that could be encountered by USSOCOM forces are classified as lethal and incapacitating. Agents may exist as solids, liquids, or gases. In addition, TIMs and potentially dangerous herbicides or pesticides could be encountered accidentally or employed by an adversary.

1-43. CW agents are grouped according to use. They can either be lethal or incapacitating. Lethal agents produce serious injury requiring medical attention (death may occur when used in field concentrations). Incapacitating agents produce temporary physiological or mental effects, and personnel may not require medical treatment to recover. Both types of agents may hinder the ability to carry out the mission.

1-44. Lethal agents are chemical substances intended for use in military operations to kill, seriously injure, or hinder military operations through their physiological effects. They are classified as nerve, choking, or blood agents. Nerve agents are considered the primary agents of threat to the U.S. military because of their high toxicity and effectiveness through multiple routes of entry. Nerve agents attack the body's nervous system. Even small quantities are extremely toxic and can cause death in less than 15 minutes, if personnel are not treated.

1-45. Incapacitating agents include blister (mustards) and compounds that affect the nervous system (quinuclidinyl benzilate and lysergic acid diethylamide [LSD]).

Note. Blister agents, such as mustard, when received in high enough doses and/or not treated properly, may be lethal. Attack by these agents may cause additional constraints by taxing the logistical force to provide additional medical support personnel and treatment.

1-46. Lethal and incapacitating agents may be disseminated by artillery, mortar shells, rockets, bombs, aircraft spray, and unconventional delivery methods. Agents may be persistent or nonpersistent, and produce immediate casualties among unprotected troops; restrict friendly use of terrain, objectives, and equipment; and degrade friendly combat effectiveness by forcing protective posture and creating confusion and stress—especially among leaders.

1-47. Nerve agents have also been produced and used by terrorist groups, as evidenced by the use of Sarin in the Tokyo, Japan, subway attack. JP 3-11, *Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments*, provides additional chemical agent operational planning considerations.

BIOLOGICAL AGENTS

1-48. The North Atlantic Treaty Organization (NATO) defines a biological agent as a microorganism (or its toxin) that causes disease or deterioration of material. Biological agents are generally directed against the respiratory system to maximize the organism's ability to diffuse directly into the bloodstream and bodily tissue. IPE generally provides protection against a biological warfare (BW) attack. Generally, BW agents may be classified into two broad groups:

- *Pathogens.* Microorganisms that produce disease in humans, animals, and/or plants (for example, protozoa, fungi, bacteria, rickettsia, and viruses).
- *Toxins.* Any toxic substance that can be produced by a living organism.

1-49. Most organisms are naturally occurring and can be found in almost any environment. Without proper hygiene and appropriate vaccines, they have the capability to rapidly cause incapacitating or lethal illness. When used as a warfare agent, biological agents can be disseminated in aerosol form, by vectors such as mosquitoes and ticks, or through contaminated food or water. JP 3-11 provides additional biological agent operational planning considerations.

RADIOLOGICAL AGENTS

1-50. Nuclear threats are associated with the explosive detonation of special nuclear material. The radiological agent (RA) threat deals with radiation hazards and radioactive materials that may be in more common use. The threat of low-level radiation exists in all operations. This threat can exist in certain expended rounds (depleted uranium), damaged or destroyed equipment, or contaminated shrapnel. It also may occur from inadequate nuclear waste disposal, deterioration of nuclear power facilities, damage to facilities that routinely use radioactive material or sources, and the direct use of radioactive materials or compounds by an adversary (terrorism). Specialized detection equipment is required to detect lower levels of radiation.

NUCLEAR WEAPONS

1-51. Nuclear weapons are similar to conventional weapons insofar as their destructive action is due mainly to blast or shock. However, nuclear explosions can be millions of times more powerful than the largest conventional detonations. For the release of a given amount of energy, the material mass required for a nuclear explosion would be much less than that of a conventional explosion. Nuclear effects are divided into the following categories: blast/overpressure, heat and light (thermal radiation), radioactivity (alpha, beta, gamma, and neutron), and electromagnetic pulse (EMP).

Blast/Overpressure

1-52. The blast wave created by an explosion produces a shock front that travels rapidly away from the fireball, behaving like a moving wall of highly compressed air (approximately 900 miles per hour [mph]). When this blast wave strikes the surface of the earth, it is reflected back, causing a second wave to be formed. The second wave will eventually merge with the first wave (called Mach effect), and the overpressure will essentially double. Winds generated by the blast of the weapon could reach several hundred mph at GZ, and be as high as 70 mph as far as 6 miles away.

Thermal Radiation

1-53. Immediately after a detonation, weapon residues emit primary thermal radiation (X-rays) that are absorbed within a few feet of air. This energy is then reemitted from the fireball as thermal radiation consisting of ultraviolet, visible, and infrared rays. The following distinct thermal pulses result from the detonation:

- *First Pulse.* It lasts about a second, has high temperatures, and can cause flash blindness or retinal burns.
- *Second Pulse.* It lasts about 10 seconds, carries about 99 percent of the thermal radiation energy, and causes skin burns and fires.

Radioactivity

1-54. A detonation emits various forms of nuclear radiation (alpha, beta particles, gamma rays, and neutrons) that are referred to as initial and residual radiation. The initial radiation is emitted within the first minute of the detonation; residual radiation is all radiation released after that time. Radiation hazards include—

- *Initial Radiation.* It requires extensive shielding, creates additional radiation contamination, and can affect materials such as those used in electronic systems (for example, radio and radar sets, gyroscopes, and computers).
- *Residual Radiation.* Its primary hazard is fallout.

Electromagnetic Pulse

1-55. An electromagnetic signal produced by a nuclear detonation is commonly known as EMP. EMP-induced currents and voltages can cause electronic component equipment failure, affecting a wide range of electric and communication equipment, global positioning systems, command control nodes, vehicle ignition systems, avionics, and fire control systems.

TOXIC INDUSTRIAL MATERIALS

1-56. Although less lethal than current CW agents, industrial materials are often available in enormous quantities, do not require expensive research programs, are easily mass-produced, do not violate the Chemical Weapons Convention, and can still produce mass casualties. TIMs could be released from industrial plants or storage depots through battle damage, as consequence of a strike against a particular facility, or as a desperation measure during military operations. They could also be used as improvised chemical weapons and have potential for inclusion in clandestine programs or contingency plans.

Note. IPE does not protect against all TIMs. For example, IPE will not protect the wearer from ammonia-based or chlorine-based industrial chemicals.

RIOT CONTROL AGENTS

1-57. RCAs are chemicals that produce temporary irritating or disabling effects when in contact with the eye or when inhaled. Generally used in the control of violent disorders, RCAs can be effectively used to contaminate terrain and to cause degrading effects on individuals, requiring them to use IPE for protection. U.S. policy does not classify RCAs as CW agents. Presidential Executive Order (EO) 11850 establishes the national policy for the use of RCAs by U.S. forces in combat.

CBRN SUPPORT AVAILABLE AT DIRECT REPORTING UNITS

1-58. Chemical personnel operate throughout USASOC. Numbers, types, and locations of chemical personnel reflect their intended missions. SF groups, the 95th Civil Affairs Brigade, the 4th Psychological Operations Group, and the SB(SO)(A) each have chemical staff personnel. The chemical staff serves in the headquarters (HQ) operations section (S-3), and functions as the principal advisor to the commander on all issues relating to CBRN. During the brigade or group planning process, chemical staff personnel integrate CBRN defense operations into the mission and monitor execution of the CBRN portions of the operation. The chemical staff makes operational reports through the S-3 and provides other required reports as necessary.

1-59. The company chemical noncommissioned officer (NCO) is the commander’s chief advisor on all aspects of CBRN operations. He provides the commander with an organic source of chemical expertise for planning and conducting CBRN defense operations. He ensures that all detachments, teams, and sections can operate their assigned CBRN equipment. He trains company personnel to support operational or thorough decontamination operations.

Chapter 2

Special Forces Group Chemical Detachments

A CRD conducts CBRN reconnaissance to search for a route or location for a JSOTF or SOTF to move to after an agent attack. In addition, detachment personnel can augment the staff of the nuclear, biological, and chemical collection center (NBCCC) and be task-organized within individual groups to satisfy mission requirements. The CDD provides decontamination support and limited rear area CBRN reconnaissance for ARSOF units. The five decontamination missions are decontamination site reconnaissance, employment of the expedient personnel decontamination system (EPDS), dirty exfiltration decontamination, operational decontamination, and thorough decontamination.

ORGANIZATION

2-1. SF groups have two chemical detachments—the CDD and the CRD. The CDD is a 14-man detachment and the CRD is a 10-man detachment.

2-2. The CRD is the basic building block for advanced CBRN support (Appendix A) for SF operations. Figure 2-1 shows the organization of a CRD. Figure 2-2, page 2-2, shows the composition of a SFG(A) CRD. The CRD plans, conducts, and provides CBRN reconnaissance and surveillance support for SOF in support of strategic, operational, and tactical objectives in all environments (permissive, uncertain, and hostile) to support the functional and geographic CCDRs' intent and objectives. The CRD commander is a captain and the detachment sergeant is a master sergeant. These two individuals make up the detachment HQ section. The three internal chemical detachment As (CDAs) are composed of four chemical operations NCOs of various ranks. Having these NCOs per CDA allows the detachments to conduct split-team operations when the situation does not warrant a full team. The CRD can serve as a manpower pool from which commanders of SOF at all levels can organize a tailored composite team to perform a specific mission.

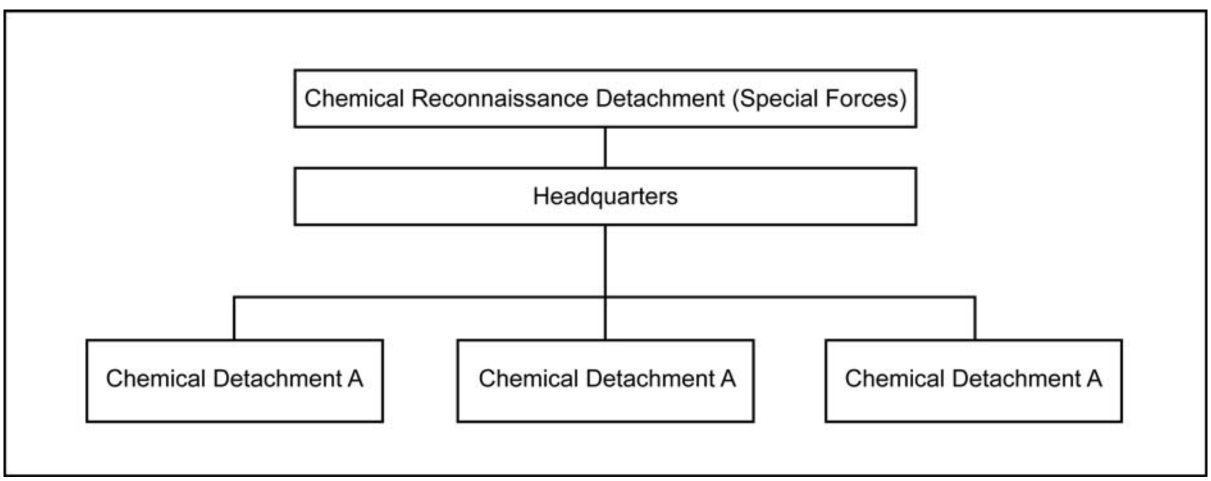

Figure 2-1. Chemical reconnaissance detachment

2-3. The CDD provides CBRN decontamination support to its parent SFG(A) and its associated SOTF area, including the planning and preparation for conduct of operational and SOF-specific decontamination missions. The CDD can be task-organized into teams to augment the SFG(A) and can assist in CBRN operations planning, decontamination, and limited CBRN reconnaissance to support contamination avoidance, as required. The CDD maintains the capability to detect and identify select TIMs using commercial off-the-shelf (COTS) detection devices. The CDD organizes to deploy four separate entities to support—

- One HQ section (supports JSOTF NBCCC).
- Three DRTs (support the SOTFs).

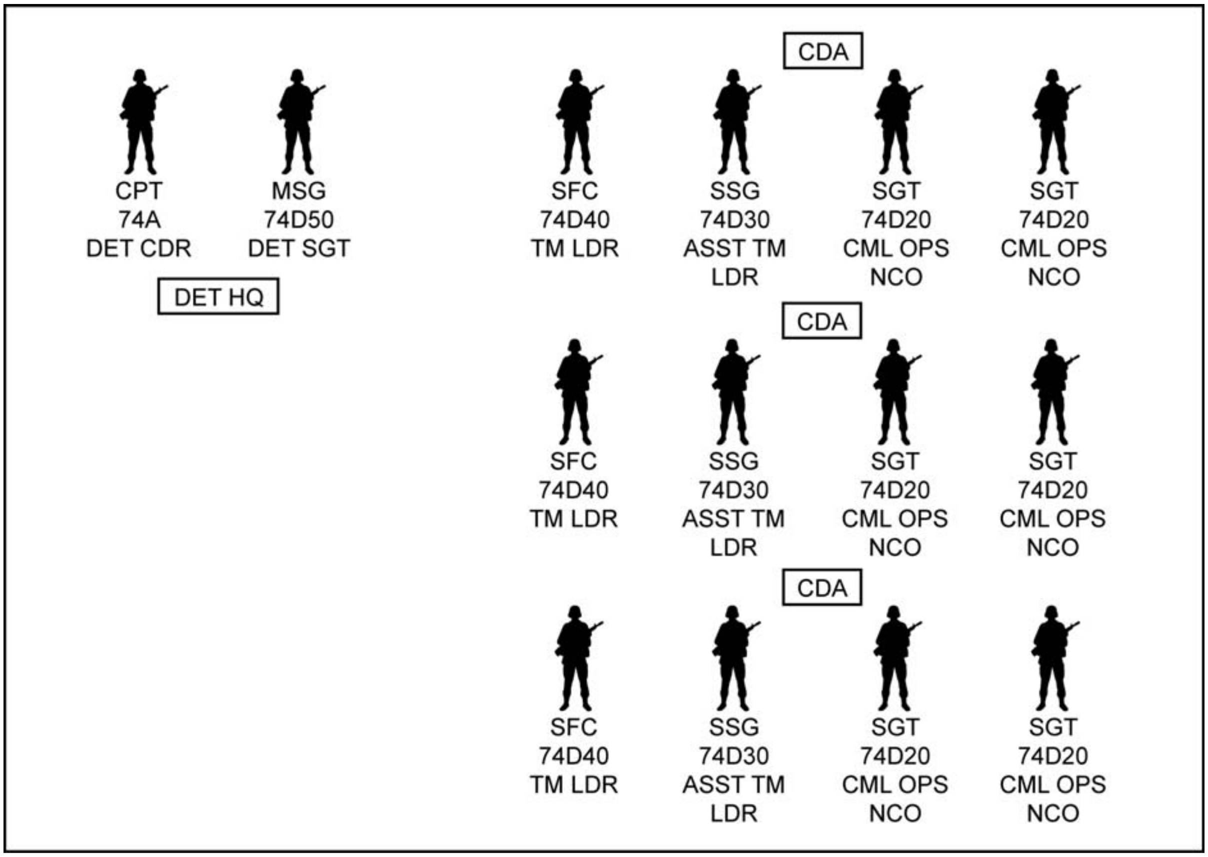

Figure 2-2. CRD organization

2-4. The group chemical staff exercises operational control of the detachment and recommends task organization to support the group's mission. Whenever possible, the CDAs are attached to the SOTF and deployed as part of that element. Each team receives orders to support a specific battalion, and it then develops standing operating procedures (SOPs) and deployment procedures to support that battalion's requirements. The DRT's primary support role is to the SOTF. Mission priority is planning, supporting, and facilitating decontamination of elements assigned to the SOTF. If a CDA is not detached to the SOTF, operational control belongs to the parent unit, the group support battalion (GSB).

MISSION

2-5. The critical wartime mission for the CRD is to support and conduct SO. As a component of ARSOF, SF units plan, conduct, and support SO activities in all operational environments and across the range of military operations. Mission priorities vary from theater to theater. SF missions are dynamic because political-military considerations affect them directly. A change in national security policy or national military strategy may radically alter the nature of an SF mission. Finally, a policy or strategy change may actually add or delete an SF mission. The CRD supports the SO critical wartime mission by—

- *Supporting Special Operations.* The CRD may conduct operations unilaterally without direct support from a Special Forces operational detachment A (SFODA) or other operational entity. To conduct these operations, the CRD requires a more SF-oriented skill set to support infiltration, exfiltration, survival, escape, evasion, and coordination. This capability set is what differentiates the CRD Soldiers from the other military occupational specialty 74D personnel assigned to the SFG(A)s.

- *Conducting Inherent Tasks for the CRD.* The CRD can infiltrate and exfiltrate specified AOs by air, land, or sea. The role of SF varies with the environment and the level of activity. When directed, the CRD can conduct operations in remote and hostile environments for limited periods with minimal external direction and support. Extended operations require that the CRD or CDA be attached to an SFODA or other operational entity. The inherent tasks are those that may or may not be done for every mission and do not fall within the other supporting missions.
- *Conducting CBRN Reconnaissance Operations.* The CRD core mission is to conduct CBRN reconnaissance and surveillance functions in support of the SO missions (SR, CP, and DA). This support may be conducted in all operational environments and usually supports strategic and operational objectives. They may be conducted unilaterally by the CRD or as a supporting function or mission of an SFODA or other operational entity. Specific functions may require the CRD to operate in increased levels of protection (Levels A or B personnel protective equipment [PPE]) (Appendix B). The CRD maintains close coordination with the supported force to ensure tactical security during operations.
- *Conducting CBRN Survey Operations.* The CRD conducts missions to determine the nature, scope, and extent of CBRN hazards activity on selected targets. These functions may support maneuver or deployment of conventional or coalition forces in the deep fight or be conducted to gather more information about suspect sites in the SSE role. Specific functions may require the CRD to operate in increased levels of protection (Levels A or B PPE). The CRD maintains close coordination with the supported force to ensure tactical security during operations.
- *Organizing and Training Forces.* SF operations are normally joint and may be combined and part of an interagency activity. They may support or be supported by conventional forces. The CRD can plan and conduct SF operations separately or as part of a larger force. The CRD can assist the SFODA in developing, organizing, equipping, training, advising, or directing indigenous forces. The CRD can train, advise, and assist other U.S. and multinational forces and agencies.

Note. In a UW environment, the CRD can serve as a pilot team to assess the HN CBRN defensive/operations potential, establish liaisons and integrate into the command and control (C2) structure, assist in development of an area complex, and provide C2 for deployed SOF within the joint special operations area, when required.

2-6. The mission starts when the CRD receives the warning order (WARNORD). The result of the deliberate planning cycle is the operation plan (OPLAN), supporting plan of execution, and time-phased force and deployment data. The CRD may or may not have a completed and rehearsed plan of execution during a crisis. Therefore, planners must also prepare to confront a no-plan situation. The SF unit, after receiving a WARNORD, is thus required to prepare and execute operations based on existing plans or situations where no plans exist. Commanders must prepare their units to effectively plan and execute operations in the event of either situation. This FM is aligned with FM 3-05.20, *(C) Special Forces Operations (U)*, and joint doctrine. It explains the inherent capabilities of SF to respond to world events and to successfully plan, execute, and sustain operations in support of a CONUS-based, power-projection force.

2-7. The CRD may deploy independently in a theater, or it may also deploy with an SFODA or conventional force into theater when performing in the SSE role. If time is insufficient for normal preparation of the mission, the commander must determine minimum-essential preparation tasks and modify normal preparation procedures to complete the tasks in the available time. The commander must inform the higher command when he cannot complete those minimum preparation tasks without an unacceptable degree of risk of mission failure.

2-8. Each supporting mission consists of tasks the CRD must execute to accomplish the overall mission. In conjunction with the supporting missions, SF CRD elements must perform survivability tasks, such as small-unit combat tasks, and operate in a CBRN environment. SF units must perform concurrent tasks as well, such as providing intelligence support to protect SO units from hostile exploitation. Survivability and concurrent tasks enhance mission success and unit survival. Units should train and evaluate these tasks based on the task's applicability to the threat and the mission. The survivability and concurrent tasks are incorporated within the supporting mission inherent tasks of a CRD.

2-9. The CRD should train for successful performance of the tasks outlined in Figure 2-3, page 2-5. Units may train tasks individually or jointly with other tasks. In either training situation, the training must begin as a situational training exercise, a command post exercise, or a simulation. The commander can execute these events as written exercises, or he may modify them to fit a specific training program. Leader activities and collective and individual tasks support each event. Soldiers master individual tasks by meeting the training standards outlined in CMF 74 or 18 Soldier's manuals and Army Officer Foundation Standards manuals. These exercises can subsequently develop into a field training exercise to train the critical wartime mission.

2-10. The CDD should provide CBRN decontamination support to its parent SFG(A) and its associated SOTF area, to include the planning and preparation for conducting operational and SOF-specific decontamination missions. The CDD can be task-organized into teams to augment the SFG(A) battalion and be prepared to assist in CBRN operations planning, decontamination, and limited CBRN reconnaissance to support contamination avoidance, as required. The CDD maintains the capability to detect and identify select TIMs using COTS detection devices.

COMMAND SUPPORT RELATIONSHIPS AND TASKS

2-11. The CRD is assigned to the group support company (GSC), SFG(A). The GSC provides supply, food service, finance, combat health services support, personnel administrative services, and organizational maintenance support to the CRD.

2-12. The CDD is assigned to the GSC of the GSB. The group headquarters and headquarters company provides religious, logistics, supply, and personnel and administrative services to the CDD. Other duties of the CRD and CDD are as follows:

- *Group or Battalion Commander.* The commander oversees the CDA. He provides his staff with the commander's intent to use the CDA and the plans accordingly.
- *Group or Battalion Chemical Officer or NCO.* The chemical officer or NCO advises the commander on the CDA's capabilities and limitations. He provides general training guidance, goals, and methods of the CDA.
- *Group or Battalion S-2.* The group or battalion S-2 provides all the intelligence needs to the CDA for its successful mission planning and execution. The intelligence includes locations of enemy units and facilities, confirmed use of WMD, suspected use of WMD, and the intent of the enemy to use WMD. The S-2 assumes control of the CDA's special intelligence material and information during the CDA's deployment and mission.
- *CRD Commander or CDA Sergeant.* The commander or CDA sergeant establishes policies and procedures, supervises and inspects operations, and makes recommendations to the group or battalion commander and JSOTF/SOTF commander, as applicable.
- *CDA Sergeant.* The team sergeant has the primary responsibility for team and individual training and readiness.
- *JSOTF/SOTF/Advanced Operational Base.* This element provides all support necessary during deployments and contingency operations.

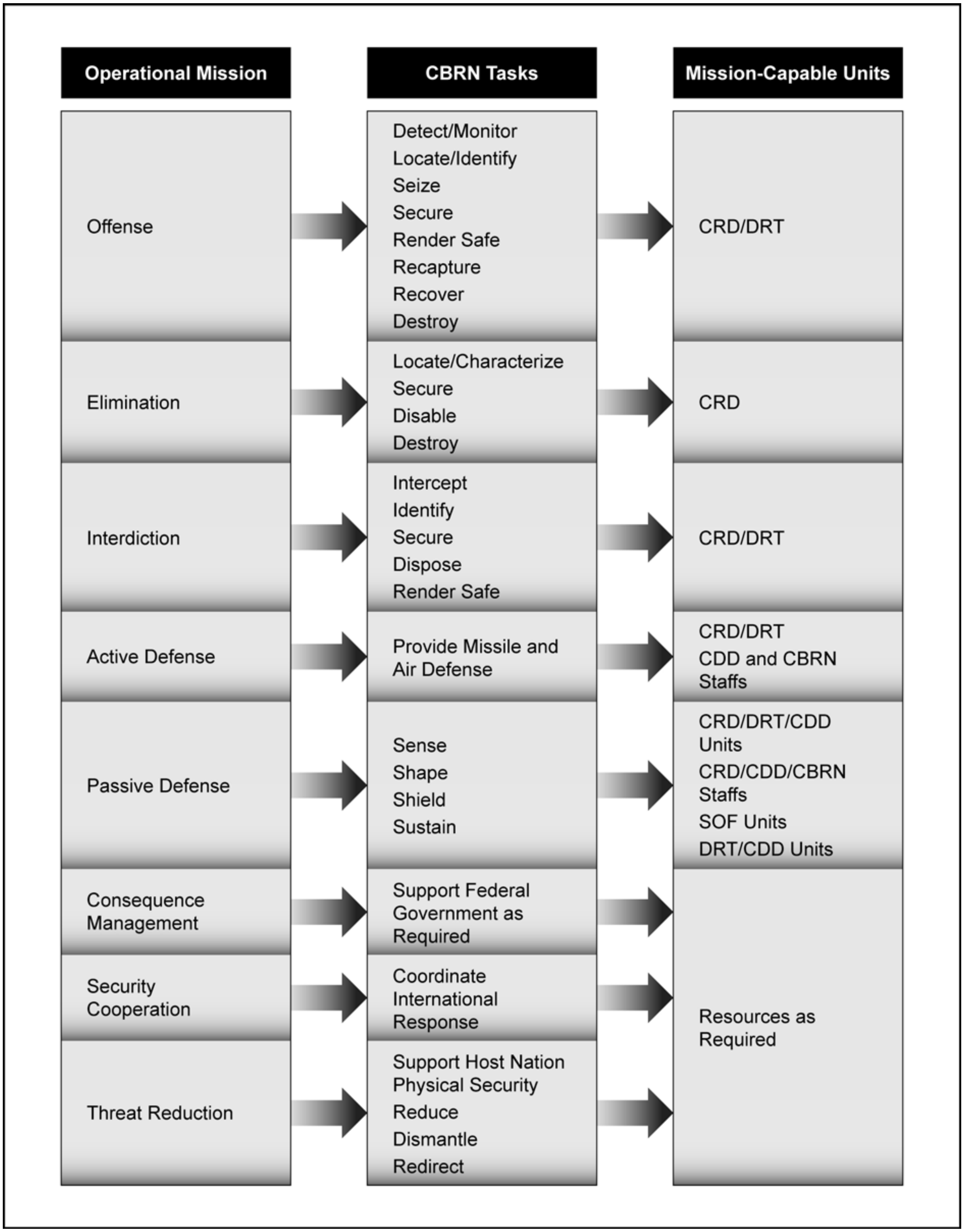

Figure 2-3. Critical wartime mission, supporting missions, and resources

TYPES OF SUPPORT

2-13. Once hostilities have started, a difficult requirement (which has national and international implications) is the confirmation of the first use of WMD, particularly CB weapons. The use of CBRN weapons against the United States or its allies must be verified. Evidence, therefore, must be scientifically valid, and any samples must have a legal chain of custody from the point of collection to presentation. The operational capabilities of the CRD help support these intelligence requirements. Strategic and tactical intelligence focuses special CBRN reconnaissance elements on specific areas of alleged threat CBRN activities and also supports the military decision making process.

2-14. CBRN personnel and detachments participate in advanced planning, coordination, and training processes with potential supported operational elements or supporting military and federal agencies, other chemical support units, and DOD response elements.

2-15. The CRD can collaterally support aspects of SR, DA, UW, and FID. Both chemical detachments can conduct CBRN reconnaissance activities in all levels of PPE (Levels A through D). They are able to assist the SFODA in area assessments, poststrike reconnaissance, battle damage assessments, and hazard assessments of damaged CBRN facilities. Additionally, the CRD can provide CBRN defensive training to SOF and select allies or indigenous forces.

2-16. The CRD habitually augments SFODAs and joint SOF to perform special tasks involved with CBRN material or facility identification, intelligence collection, presumptive or field detection, and identification of agent types (to include CB warfare agents, select toxic industrial chemicals [TICs]-TIMs, and radiological measurements). The detachment also handles material sampling, packaging, and movement of material to confirmatory testing organizations within the AO or to designated escort unit sample transfer points (STPs). It possesses limited decontamination capability (immediate and operational levels) of assigned or supported personnel and equipment, and advises supported personnel on setting up a decontamination site. The CRD can obtain, package, and transport medical tissue samples, and conduct coordination with medical, legal, and tactical points of contact to ensure adequacy of samples, types, and procedures.

CBRN SUPPORT TO JOINT AND INTERAGENCY OPERATIONS

2-17. When SOF deploys, they may be integrated into a SOTF, JSOTF, or combined joint special operations task force (CJSOTF). These task forces could include sister Service and coalition forces with very little CBRN reconnaissance or decontamination capability. As a result, the CRD and CDD provide CBRN capabilities to all the forces assigned to a SOTF, JSOTF, or CJSOTF.

2-18. In addition to task force support, CRDs also provide technical intelligence to other government agencies with analysis and presumptive identification of suspect chemical compounds and radioactive isotopes.

DEPLOYMENT AND EMPLOYMENT

2-19. The CRD can deploy to support all joint SOF units and geographic or functional CCDRs for CBRN reconnaissance and surveillance activities. The CRD conducts site survey team missions IAW the Defense Threat Reduction Agency's (DTRA's) mission statement, which says, "Site survey teams conduct intrusive inspections of suspect WMD sites to assess the presence of research and development, production, storage, or weaponization of WMD materials for further exploitation." The CRD operates in the following methods:

- *Permissive Environments:* Unilaterally.
- *Uncertain Environments:* Unilaterally or augmented to an SFODA or other SOF operational detachments or elements.
- *Hostile Environments:* Augmented to an SFODA; other SOF operational detachments, elements, or trainers of SFODAs; and SOF operational detachments or elements deploying into denied areas.

2-20. The detachment is structured with the intent that the three subordinate CDAs can provide habitual support to a particular SF battalion and be employed with SFODAs, when appropriate. Each CDA can subdivide into two “split teams” and be attached to two separate SFODAs or missions, when required. The CRD receives additional or specialized CBRN reconnaissance, Ranger, and SF-related training and is familiar with SF-unique operating procedures. The CRD and associated CDAs are uniquely suited for rapid worldwide deployment in support of the GCC’s requirements. The CRD retains the ability to be sliced or deployed to support joint SOF or interagency mission requirements, when requested.

This page intentionally left blank.

Chapter 3

75th Ranger Regiment Decontamination and Reconnaissance Teams

Unlike the other ARSOF chemical detachments, Ranger chemical teams are a regimental asset in support of the Ranger battalions. These teams perform the same type of missions of chemical reconnaissance and decontamination for Ranger operations. Ranger chemical teams provide FP for Ranger forces that may be required to operate in high-threat or high-risk CBRN environments. These missions may include conducting DA against an adversary's CBRN capabilities.

ORGANIZATION

3-1. Figure 3-1 shows the composition of the Ranger DRT assigned to each Ranger battalion. The DRT conducts CBRN reconnaissance and surveillance support for its assigned battalion in support of strategic, operational, and tactical objectives in all environments (permissive, uncertain, and hostile). DRTs are assigned to the Ranger support company. Each DRT has two teams; each team consists of one E-5 and two Skill Level 1 Soldiers, making it possible to support their battalions in decontamination, reconnaissance, and FP operations in two different locations.

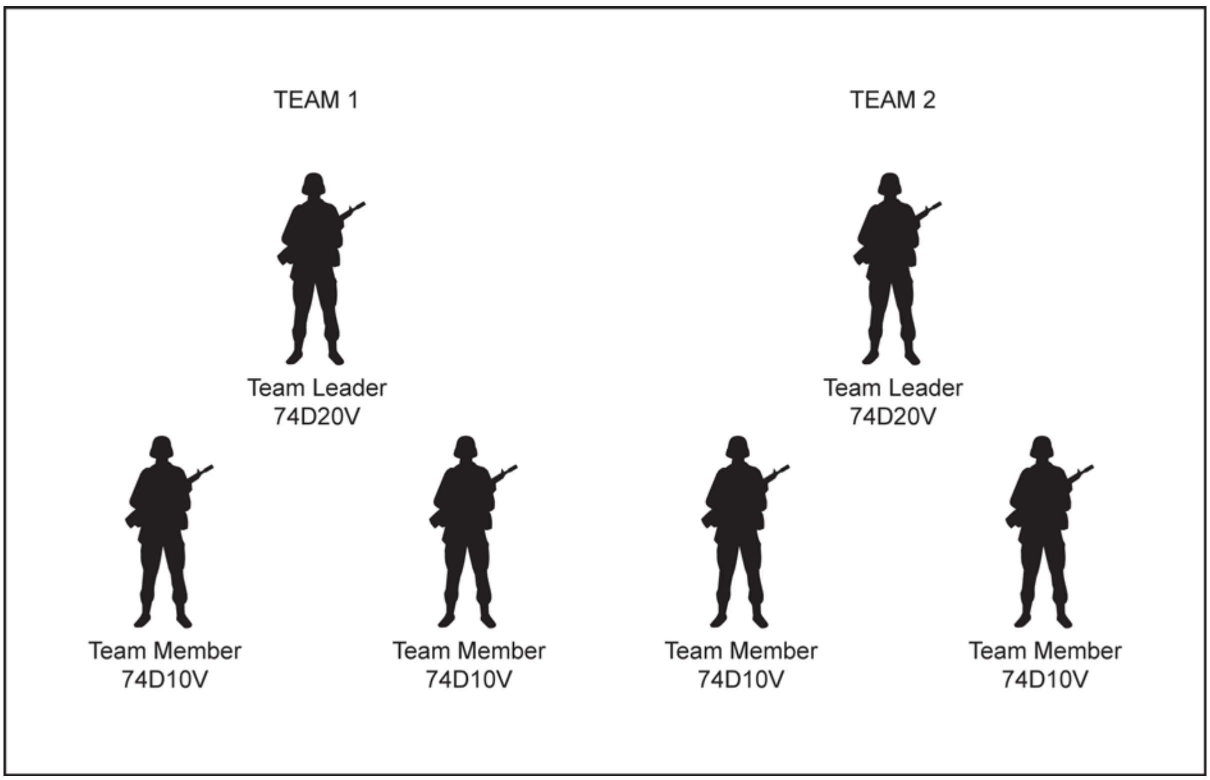

Figure 3-1. Ranger battalion support DRT

MISSION

3-2. The mission of the DRT is to conduct no-notice decontamination and FP measures in a CBRN environment to support and protect Ranger and SOF operations. The DRT maintains the ability to conduct the following collective tasks in support of its assigned Ranger battalion:

- Plan and conduct operational decontamination for a Ranger platoon.
- Support conventional unit in thorough decontamination operations.
- Conduct dirty exfiltration decontamination using EPDS.
- Conduct CBRN SSE.
- Conduct CBRN survey operations.
- Conduct CBRN sampling operations.
- Conduct site assessment of TIC, TIM, or WMD facility.
- Coordinate and conduct transload operations with technical escort unit (TEU) or JTF units (IAW SOP).

CAPABILITIES

3-3. The DRT provides support in many areas of the CBRN mission. Capabilities of the DRT include—

- *Detection.* The DRT collects and packages samples of possible CBRN agents as part of SSE operations. The team can take photographs for detailed SSE of the sampling area, mission site, and other areas of importance to assist in follow-on operations. It can also monitor the air for CBRN, TIC, and TIM hazards. This data gives the unit on the ground early warning of potential hazards at the mission location.
- *Identification.* The DRT can make positive identification on most known CBRN agents.
- *Decontamination.* Using the EPDS, a 3-man DRT can conduct an operational decontamination mission that is capable of decontaminating up to 14 men, exfiltrating a target, and doing so within 10 minutes of exposure.
- *Sampling.* The DRT has the capability to collect soil, water, and air or vapor samples as follows:
  - For soil and water sampling, the team uses the M34A1 chemical, biological, and radiological (CBR) sampling kit. The M34A1 is a basic combat lifesaver bag with each zippered compartment dedicated for soil or water sampling. The unzipped center pocket is for scissors, pens, tape, and so on. A disposable composite liquid waste sampler (COLIWASA) will be used for drum or water sampling.
  - For air or vapor sampling, the team uses the M256A1 or M18A3 kit or the Draeger air sampler. The Draeger tubes and M18A3 tubes are very fragile and must be protected from breakage at all times. After using the M256A1 kit, M18A3 tubes, and Draeger tubes, they will then become samples and should be treated as such.

COMMAND SUPPORT RELATIONSHIPS AND DUTIES

3-4. The regimental chemical officer or NCO ensures the DRTs receive the best training and equipment available. He participates in all mission planning at the regimental level to advise the commander on his CBRN assets.

3-5. As the senior CBRN representative, the battalion chemical teams provide the battalion commander all the necessary recommendations for training, funding, and employment for all CBRN matters. The DRT NCOs serve as the DRT leaders and oversee management, training, and professional development of the DRTs. Additionally, they maintain 100 percent of the battalion's contingency chemical defense equipment (CDE), which is tracked in the Mobility Inventory Control and Accountability System for accountability and serviceability.

DEPLOYMENT AND EMPLOYMENT

3-6. The Ranger DRTs deploy in direct support to their Ranger battalion. Each DRT can function independently from the other team during operations while providing CBRN support. This capability allows each Ranger battalion to deploy two separate teams, simultaneously, without the teams having to mutually support each other.

3-7. The Ranger DRTs function as a single entity operationally or during training to support battalion-, company-, and platoon-level operations. The battalion regularly attaches the DRTs to companies and platoons when the threat level supports the capability on selected missions. DRTs can be allocated to companies and platoons that are forward-deployed at outstations based off historical and emerging threat reporting. The company and platoon uses DRTs as follows:

- The DRT provides the Ranger companies enhanced CBRN decontamination, reconnaissance, and surveillance capabilities that meet mission requirements at the operational and tactical levels.
- The company commander and platoon leader determine the level of support for DA missions and raids. These missions usually occur in a unique combat environment, often urban and time-critical. When required to do so, the DRT completes its mission faster by taking fewer samples and conducting EPDS closer to the sampling site. In such cases, control samples may not be collected. The DRT also trains extensively in urban operations with its supporting unit (squad or platoon) to prepare for such missions.

This page intentionally left blank.

Chapter 4

160th Special Operations Aviation Regiment

The 160th Special Operations Aviation Regiment (Airborne) (SOAR[A]) has no requirement for special CBRN teams, such as the CRD or DRT, due to its mission. With the exception of their aircraft, the internal decontamination teams perform the same functions as their conventional-forces counterparts. Aviation personnel pay special attention to their aircraft and focus closely on these critical areas: chemical defense, nuclear defense, and decontamination.

CHEMICAL DEFENSE

4-1. The blades of rotary aircraft cause the dispersal of air (and chemical agent vapors) below the aircraft. The use of chemical agents against aircraft in flight is not effective. However, this does not mean aircrews are immune to chemical exposure. Hazards include liquid chemical agents getting on the aircraft through aerosol dispersal or aircraft inadvertently flying through a chemical agent cloud. The mask and hood should be kept on under the flight helmet even when using night vision goggles (NVG). If aircrew members begin to show symptoms of chemical agent poisoning, the pilot should land the aircraft even if self-aid or buddy-aid has been administered.

Note. The chemical makeup of atropine (the active drug in the nerve agent antidote kit) can cause difficulty in flying.

NUCLEAR DEFENSE

4-2. It is unlikely that personnel will be warned of an actual enemy nuclear attack. However, if notification has been received by intelligence sources of an impending nuclear threat, special considerations must be made for both parked and flying aircraft.

PARKED AIRCRAFT

4-3. In a high-risk nuclear threat environment, aircraft need to be protected. Numerous factors should be considered when intelligence leads to a threat. Personnel should—

- Park aircraft inside natural revetments, bunkers, barricades, or man-made structures (hangars), and tie aircraft down to protect them from strong winds. Parking aircraft inside structures may also help protect them from a blast that may affect a location behind a hill directly in line from the aircraft's location and GZ.
- Remove rotor blades, if possible, to reduce aircraft damage from strong winds.
- Tape the windscreen of the aircraft to help it withstand the overpressure. However, this procedure is not effective in high-pressure regions.
- Keep all nonessential communications and avionics equipment turned off and, when practicable, covered with plastic. Doing so will help protect equipment from the effects of the EMP produced by a nuclear blast.

Flying Aircraft

4-4. During permission planning, pilots and mission planners should identify those areas most likely to be affected. The aircrews should—

- Stay outside the minimum safe distance limits.
- Be familiar with the effects of a nuclear burst and what actions to take during a burst.
- Be aware that nuclear bursts can cause flash blindness. Aircrews should consider the following:
  - During the day, there is little chance of flash blindness unless personnel actually focus on the fireball.
  - At night, however, there is a substantial risk of flash blindness, as the use of NVG enhances the intensity of the flash.
  - Flash blindness can occur before individuals know they have retinal burn.
  - One pilot could wear a patch over one eye. This practice allows vision in this eye in case blindness occurs to the unprotected eye and the other pilot.

Actions During a Nuclear Attack for Flying Aircraft

4-5. Aircrews can take several immediate actions to protect the aircraft, but all actions are dependent on whether the pilot has become blinded by the fireball of a nuclear explosion. Personnel should react as follows:

- The pilot should look away and turn the aircraft away from the fireball immediately.
- Pilots should be aware during descent that blast effects and EMP may damage electronic equipment and aircraft flight controls.
- Even though a nuclear burst is visible, the aircraft may not be within range to receive severe damage. Therefore, a pilot should not land immediately in trees unless there are no suitable landing areas or clearings nearby.
- After landing the aircraft, the crew should remain inside.
- All personnel should wait until the blast wave has passed. The positive and negative phases of the blast will occur about the same time.

4-6. If the pilot is blinded, he should not attempt to land the aircraft but to gain altitude until vision returns. (During the first seconds after the flash, the immediate reaction is to gain altitude.) Personnel should not tamper with EMP-hardened equipment as it may downgrade the EMP protection capabilities. Only the manufacturer may install this type of equipment.

> ***Note.*** The effectiveness of EMP protective equipment is not fully known, so it may be that various controls may yet become affected.

Actions After a Nuclear Attack for Aircrews

4-7. Once they have landed, personnel should ensure that all debris has fallen and that the airframe has no structural damage. If no significant damage is present, the crew continues the mission. If the aircraft is not capable of flight, the pilot should notify higher elements.

4-8. Aircraft can fly safely through fallout. However, exposure to fallout may cause alpha radiation particles to become ingested and, subsequently, can cause radiation sickness. The use of protective masks may provide some protection initially, but the canister or filters of the masks cannot withhold the tiny alpha particles for a prolonged duration.

DECONTAMINATION

4-9. Decontamination is the removal, destruction, or neutralization of contamination. When personnel have become contaminated, there are practical reasons why at least some decontamination must occur as soon as possible.

4-10. Any time personnel or equipment become contaminated, detailed mission analysis must occur to determine what level and type of decontamination is necessary and tactically feasible. Before any mission where CBRN contamination is possible, the following factors should be addressed:

- Avoid contamination whenever tactically possible.
- Make sure infiltration or exfiltration landing zones are located in an uncontaminated area and upwind from any contamination.
- When transport of contaminated personnel is necessary, segregate them into as few aircraft as possible.
- Use disposable, nonporous material (plastic tarps or a chemical contamination barrier) where contaminated passengers and equipment contact the aircraft.
- Minimize cross-contamination from the exterior to the interior.
- Use hangars, shelters, or dispersal of aircraft at the immediate staging base or forward staging base to limit aircraft contamination in case of a CBRN attack.

4-11. The increased airflow over the aircraft's smooth skin increases the rate of evaporation. However, some agents may migrate to crevices, rivet heads, and joints, and continue to be a hazard. Thickened agents evaporate more slowly and may remain a hazard even after prolonged flights. If the interior is contaminated, flying the aircraft with the doors and ramp open can help reduce the hazard.

4-12. Many factors affect decontamination operations. A few questions that need to be asked are—

- What is the agent?
- Is it persistent or nonpersistent?
- What is the amount of contamination?
- What number of personnel and which aircraft are contaminated?
- Is there a water supply at the decontamination site?
- How will the weather conditions affect the operation?

4-13. The aircraft washdown site should be located as far forward as possible, such as the forward arming and refueling point (FARP), transload site, or an abandoned airfield. The site should allow for adequate spacing of the aircraft and drainage away from the site. If the area is hostile or uncertain, a security detail will be required.

4-14. The decontamination team, at a minimum, will contain a noncommissioned officer in charge (NCOIC), two attendants, a medic, and a radio operator. The washdown site NCOIC determines site setup and coordinates with the airborne mission commander for aircraft segregation and arrival. All non-contaminated aircraft will laager upwind of the site or return to base. The contaminated aircraft should shut down before decontamination and the crew should process through the EPDS or MOPP gear exchange site.

4-15. The type and amount of contamination and mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC) determines how extensive the decontamination operation will be and what equipment is required. A limited decontamination can be done by the FARP personnel or crew chiefs using M295s and the Decofogger, if sustained operations in a contaminated environment are required.

4-16. A typical aircraft washdown operation will include up to three stations. Table 4-1, page 4-4, explains what occurs and what is used in each one. A typical site will allow for adequate spacing and drainage as well as maintenance support. The actual location should be, at a minimum, 10 km downwind of any populated areas.

4-17. Detailed aircraft decontamination (DAD) is the most difficult of all decontamination operations. The complete removal of contamination depends on many factors. Table 4-2, page 4-4, explains each station and what occurs. In some cases, extensive maintenance support may be required to remove or replace components that cannot be effectively decontaminated. Monitoring may continue for days or even weeks after the initial decontamination.

Table 4-1. Typical aircraft washdown operation

Station	Action	Equipment			Attendants
		Chemical	Biological	Radiological	
1	Scrub Gross Decontamination	M295 Brushes	Hot, Soapy Water	Hot, Soapy Water	1
2	Apply GD-5 and/or DF-200	Decofogger GD-5	Decofogger GD-5	N/A	1 – 2
3	Wash External Area	MPDS or Water Pump	MPDS or Water Pump	MPDS or Water Pump	2 – 4

Table 4-2. Detailed aircraft washdown operation

Station	Action	Equipment			Attendants
		Chemical	Biological	Radiological	
Staging Area	Determine Amount of Contamination and Segregate	M8 Paper, ICAM, M256A1 Kit, M18A1 Kit	Bio Assays	AN/VDR-2, UDR-13	1 – 2
1	Wash and Remove Gross Contamination	Water-Dispersing Device,* Brushes, M295 IEDK	Water-Dispersing Device,* Brushes, 0.5% Hypochlorite Solution	Water-Dispersing Device;* Brushes; Hot, Soapy Water	2 – 4
2	Apply Decontamination Solution (Interior and Exterior)	Decofogger Cobra, Water- or Foam-Dispersing Device,* GD-5/DF-200	Decofogger Cobra, Water- or Foam- Dispersing Device,* GD-5/DF-200	Interior Decontamination; Hot, Soapy Water	2 – 4
3	Set Up Contact Time			N/A	
4	Rinse	Water-Dispersing Device*	Water-Dispersing Device*	Water-Dispersing Device*	2 – 4
5	Check and Provide Maintenance Support	M8 Paper, ICAM, M256A1 Kit, M18A1 Kit	Bio Assays	AN/VDR-2, UDR-13	1 – 2

* Water-dispersing device can be any pump or washer system in which the output is between 65 gallons per minute (gpm) and 125 gpm; for example, an M17 LDA, a fire hydrant, an aircraft power washer, or a fire truck.

4-18. DAD techniques can differ from those shown in Figure 4-1, page 4-5, depending on how many aircraft are contaminated, what equipment is available, and the decontamination site. Using tugs to process aircraft through the site is the most efficient technique when several aircraft are contaminated. If only one or two aircraft are contaminated, they can remain stationary and the decontamination team will conduct all stations in sequence at the aircraft.

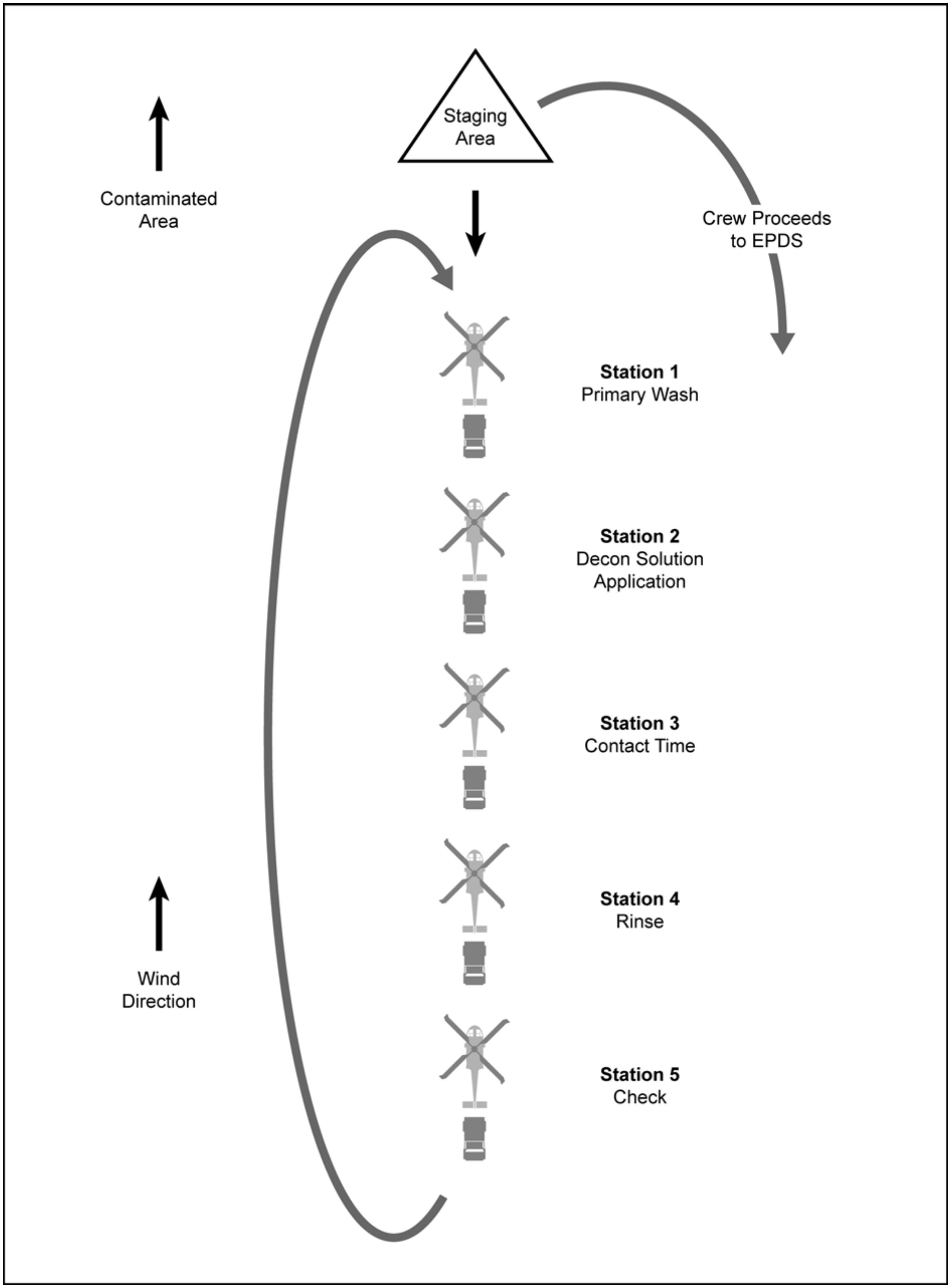

Figure 4-1. Detailed aircraft decontamination techniques

This page intentionally left blank.

Chapter 5

Planning Staff CBRN Considerations and Tools

This chapter provides planning considerations to supplement those already in place when conducting deliberate or time-sensitive planning for operations in a CBRN environment. Primarily designed for SOTF staff planners, these considerations can be applied to any staff involved in the planning for CBRN operations. Detailed mission planning is vital to SOF mission success. Planners at every level must provide the most complete and accurate information available to ensure mission success and personnel survival. SOF CBRN planners must be brought in early in premission activities and used continuously until mission completion.

MISSION ANALYSIS

5-1. The hazards of operating in a CBRN environment require a higher degree of mission analysis, planning, and mission-specific training than that normally associated with established primary missions. Mission analysis conducted by a higher HQ provides operational element commanders with sufficient information to begin mission planning. Planners must clearly understand the commander's intent.

5-2. Mission analysis involving CBRN, whether during time-sensitive or deliberate planning, must be able to focus staff planners throughout the decision-making process. This is accomplished by applying a narrowing-down process. Planners use a series of questions to assess the suitability, feasibility, and acceptability of undertaking a special operation in a CBRN threat environment The following considerations should be incorporated into existing mission analysis SOPs when faced with a CBRN threat:

- *Analyze Higher Headquarters' Order.* Planners should determine mission and intent, concept, timelines, adjacent units' missions, and assigned AOs. They review for CBRN protection guidance and specified or implied CBRN defense tasks, such as exposure guidance. Analysis also includes evaluating potential SOF employment for appropriateness, feasibility, and supportability early in the planning cycle and before target assignment (joint targeting coordination board representation). Planners provide clear guidance to commanders for executing SO missions by asking the following questions:
    - Is this an appropriate mission for SOF? SOF should be used against those key strategic or operational targets that require unique SOF skills and capabilities. If the targets are not of operational or strategic importance, then SOF should not be assigned as a substitute for other forces.
    - Does this mission support the theater campaign plan? If the mission does not support the GCC's campaign plan, then there are probably more appropriate missions available for SOF.
    - Is this mission operationally feasible? Does it require SOF to operate in a CBRN environment longer than they can sustain themselves? The joint Services lightweight suit (JSLIST) provides effective protection from contamination for up to 24 hours once contaminated. Current protective undergarments provide limited protection (up to 12 hours) against vapor exposure only. Butyl rubber gloves provide 6 hours of protection from contamination. Protection factors less than the 24 hours provided by the JSLIST must be planned for (maritime—salt water degrades protection factor). SOF are not structured for attrition or force-on-force warfare and should not be assigned missions that are beyond their capabilities. Planners must consider the vulnerability of SOF units to larger, more heavily armed or mobile forces, particularly when in hostile territory.

- Are the required operational resources available to support the mission? Some SOF missions require support from other forces for success. Are these resources capable of supporting in a CBRN environment? Support involves aiding, protecting, complementing, and sustaining employed SOF. Support can include airlift, maritime transport, intelligence, communications, and logistic support. Even though a target may be vulnerable to SOF, deficiencies in support may affect the likelihood for success or may entirely invalidate the feasibility of employing SOF. SO chemical detachments must be considered in planning and be prepared to perform "dirty" exfiltration decontamination.
- Does the expected outcome justify the risk? Commanders should recognize the high value and limited resources of SOF and ensure that the benefits of the mission are worth the risks. Assessment of risk should consider not only the potential for loss of SOF units and equipment, but also the risk of adverse effects on U.S. diplomatic and political interests should the mission fail.

- *Conduct Initial Intelligence Preparation of the Battlefield.* Planners must define the operational environment, describe the battlefield effects, evaluate the adversary, determine the most probable or most dangerous adversary course of action (COA) (to include TIM considerations), determine adversary offensive and defensive CBRN capabilities, and determine adversary CBRN usage intent. They must also determine threat values—superstitions, fears, religious beliefs, and so on—that may be exploited to deter use of CBRN weapons and determine enemy centers of gravity, vulnerabilities, and limitations. Planners analyze how the enemy conceptualizes the situation and the opposing friendly situation, and identify water sources and any local demands against that water supply. Decontamination sites are located away from local water supplies to prevent contamination of that water source.
- *Determine Specified and Implied Tasks.* Planners review the plan or order for further specified or implied CBRN defense tasks.
- *Review Available Assets.* Commanders review the status of available assets (forces, equipment, supplies, and host-nation support [HNS]) to support identified tasks (Figure 5-1).

- Availability of detection and identification equipment.
- Availability of collective protection for rest and relief.
- Medical pretreatments, prophylaxis, treatments, and evacuation.
- Decontamination of equipment and casualties.
- Resupply of expendable gear (for example, clothing, IPE, masks, gloves, drink bags, and medical kits).
- Equipment recovery and evacuation of contaminated equipment and personnel.
- Mortuary affairs—policy, standards, and procedures.
- Emergency destruction and evacuation of munitions—United States or captured.
- Safe transportation and handling of CBRN samples.

Figure 5-1. Support assets

- *Determine Constraints.* Shortage of mission-essential assets at the individual, unit, and theater levels is an immediate constraint on operational capabilities. Other CBRN defense constraints include items such as levels and rates of supply, rates of usage, decontamination throughput capability, water availability, protective suit life expectancy, environmental considerations, military and civilian advanced CBRN training readiness (Appendix C), and HN CBRN support requirements.

Note. An assessment of psychological impacts of U.S. forces having chemical or biological defense equipment that is not available to HN personnel should be included.

- *Identify Critical Facts or Assumptions.* Unit leaders determine CBRN facts or assumptions that are specific to mission situations, and use METT-TC to assist in making determinations. Unit leaders analyze the situation in the context of METT-TC:
  - *Mission* refers to the ability of personnel to accomplish the required tasks (while wearing protective equipment) and the criticality of the mission in relation to force survivability (how much risk is acceptable).
  - *Enemy* refers to enemy activity. For example, it would be somewhat fruitless to attempt the thorough or reconstitution levels of decontamination if chemical-laden missiles were continually impacting or excessive sniper or SOF activity existed.
  - *Terrain and weather* refers to the suitability of the land in regards to decontamination operations. This assessment includes composition, degree of roughness or vegetation, vertical slant, availability of water sources, and available space.
  - *Troops and support available* refers to the ability and proficiency of personnel. Sufficient personnel (both in the context of numbers and training) may not exist to effectively conduct large-scale decontamination operations. To a degree, this factor is interrelated with the mission component. On one hand, decontamination operations may not be required for a group of people who can function effectively in IPE, while at least the appearance of extensive decontamination operations may be needed to motivate personnel who have been psychologically affected by the use of chemical agents. The length of time that personnel have already been at MOPP4 will impact the criticality of decontamination efforts. Personnel will almost certainly need to find or create (decontaminate) a clear area after 36 hours of MOPP4, whereas this is not nearly as critical at the 2-hour point.
  - *Time available* refers to the timing associated with, or required for, task completion. Generally speaking, thorough or reconstitution decontamination operations are exceptionally time-consuming. Time itself brings options with it. For example, if an area is not needed for mission operations, it can be clearly identified with warning placards and left to weather.
  - *Civil considerations* refer to the local populations that are either contaminated or may become contaminated. For example, a SOF element, possessing complete IPE, may operate in a local village where there is no IPE available. What are the implications of the village coming under CBRN attack and the postattack welfare and sustainability of the protected SOF? What are the likely reactions of the surviving populace and the logistics considerations for scores of sick and dying littering the area?
- *Consider Additional Factors.* In addition to METT-TC, planners also should consider the following factors:
  - **Agent Toxicity.** Although the use of skin decontamination kits associated with immediate decontamination is always required, extending the effort into the personal level or above may not be required for a variety of reasons. One factor is agent toxicity. For example, if personnel are well trained and protected, the contact hazard associated with miniscule drops of mustard agent (HD) (lethal dose [LD] 50 of 1400 mg per person) does not begin to approach the contact hazard of ethyl-S-dimethylaminoethyl methylphosphonothiolate (VX) (LD of 5 mg per person—a figure 280 times deadlier). Operational decontamination activities are potentially more beneficial with VX because the human penalty associated with inadvertent contact (for example, through a hole in a glove) is much higher.
  - **Agent Persistency.** It is probable that some threat agents could have largely dissipated before an installation could get to the point of focusing concentrated decontamination efforts. For example, given a missile ground burst with GB, the agent should be effectively weathered in 18 minutes under typical weather conditions of 20 degrees Celsius (°C) and 3 knots wind speed.
  - **Specific Hazard to Personnel.** Personnel must assess whether the hazard is one of contact, inhalation, vapor skin penetration, skin penetration through cuts or scratches only, or ingestion. The answers to these questions provide insight to the type (if any) and extent of decontamination that may be required.

- **Type of Contaminated Surface.** Chemical agents are removed from some surfaces easier than others. For example, agents can be easily removed from metal but they cannot be removed from untreated wood or concrete block. The type of surface includes such factors as composition (metal or wood), surface shape (smooth, rough, crinkled, multiple bends, or catch basins), and ability to manipulate the surface (turning over dirt is much easier than turning over runway surfaces).
- **Extent of Contamination.** The three considerations in this area are total area coverage (small areas are potentially workable whereas decontamination of large areas is generally not cost effective), the concentration of agents in the area (surface deposition of g/m2 with resulting vapor hazard of mg/m3), and the criticality of the item or area in question. If the items are not essential to mission operations, it is easier and safer to let them weather.
- **Present or Forecasted Weather Conditions.** The effect of weather will play an important part in any decontamination decision, both in terms of the need for the operation and in terms of what effect the weather will have on personnel. Increases in temperature or wind speed will result in decreased agent persistency times. However, these same conditions may resuspend agents in dust or powder form, and make it more difficult for personnel to work at MOPP4.
- **Equipment Limitations.** This factor is critically important. SOF leadership must accurately compare the numbers and types of decontamination assets available with the decontamination results desired. For example, there may be sufficient M291 kits to handle skin decontamination, but insufficient M295 kits to effectively use them for operational decontamination operations. Further, many agents' characteristics of insolubility with water and limited hydrolysis are determining factors why certain decontamination apparatus, such as the M17, can move contamination (to a degree) from one place to another, but cannot neutralize the agent to the point an overall reduction in MOPP easily occurs.

- *Conduct Risk Assessment.* Planners conduct a detailed assessment of risks and mitigating measures during COA development.

Note. Appendix D provides a sample CBRN risk assessment and vulnerability analysis tool.

- *Determine Initial Commander's Critical Information Requirements (CCIRs).* Planners should list less than 10 questions that focus on a specific event and provide intelligence required to support a single critical decision.
- *Determine Initial CBRN Operation Plan.* The commander determines key events or triggers that will initiate CBRN actions. He prioritizes use of CBRN assets and identifies likely CBRN or TIM hazard areas (these areas become named areas of interest).
- *Plan Use of Available Time.* Planners overlay friendly timelines with projected enemy timelines to mitigate or exploit the visible windows of risk or opportunity.
- *Conduct a Mission Analysis Briefing.* The planners brief mission analysis products and recommended restated mission. They explain the key CBRN factors, which include discussion of CBRN and TIM hazards, their associated risks, and critical mitigation measures.
- *Develop Initial Commander's Intent.* The commander states his intent, which includes conditions for success with respect to the adversary, the terrain, or the desired end state.
- *Issue Commander's Guidance.* Unit leaders issue the key CBRN aspects of command guidance, which include CCIR, risk guidance, priorities of support (avoidance, protection, decontamination, recon, and smoke), timelines, and rehearsals.
- *Issue a Warning Order.* The commander issues a WARNORD, unless the threat is immediate. CBRN guidance in unit WARNORDs is generally restricted to minimum protective posture or time-sensitive requirements; for example, initiating medical immunizations and prophylaxis, initiating contamination avoidance measures, preparing medical treatment facilities to receive CBRN casualties, or preparing for decontamination operations.
- *Review Facts/Assumptions.* Commanders and unit leaders review determined requirements and ensure plans and orders are the appropriate guidance.

MISSION PLANNING

5-3. The effects of CBRN weapons can negate the operational advantages afforded SOF because SOF have limited CBRN defense infrastructure. Therefore, SOF rely heavily on threat assessment, early detection, contamination avoidance, and self-decontamination. Deployed SOF may carry and operate all dismounted and essential equipment with them. If threat analysis does not accurately identify CBRN risks, commanders may not consider IPE to be mission-essential and may deploy their units without adequate CBRN protection. Assuming IPE is available, extended periods in MOPP may be unacceptable under all but emergency conditions. Timely and accurate intelligence, use of field expedients, foreign or captured CBRN equipment, and maximum use of weather and terrain are key considerations for SOF operating in CBRN environments. Designated SOF detachments are uniquely trained to infiltrate deep into adversary rear areas to confirm or deny the adversary's CBRN capability. The role of SOF in counterforce operations is an integral element of the deliberate planning process. Mission planning must not be limited to individual CBRN defensive measures. Planning must consider the overall mission, its intent, and its subsequent impact.

5-4. Detailed mission planning based on specific, comprehensive, and current intelligence is vital to successful execution of SOF missions and, potentially, the very survival of a SOF element. Collection and analysis gives appropriate attention to regional CBRN threats. Intelligence assets define the operational environment, describe the battlefield effects, evaluate the adversary, determine the most probable or most dangerous adversary COA (including TIM considerations), determine adversary offensive and defensive CBRN capabilities, and determine adversary CBRN usage intent. SOF personnel must have a thorough knowledge of the operational area, to include geographic, political, social, economic, informational, military (enemy order of battle and operational concepts), and environmental conditions. Also, for some missions, SOF personnel must know the language, customs, ethnic and religious affiliations, and antagonisms of the local population that may affect mission execution (for example, custom of wearing a beard precludes a tight seal on a gas mask). This level of area orientation is best achieved through previous operational experience, mobile training teams, deployments for training in the area, or intensive preemployment study of the intended operational area.

5-5. SO missions must be planned completely—insertion, resupply, fire and maneuver support, extraction—before committing the force. The nature of the target, enemy situation, environmental characteristics of the operational area, methods of insertion and extraction, length of force exposure, tactical considerations, logistic requirements, and the size and composition of the command and support structure dictates the size and capabilities of the assigned force. Planners must consider the CBRN defense procedures used by components when involved in joint operations.

> ***Note.*** Planners should consider establishing component working groups to resolve interoperability issues.

5-6. SOF mission planners ensure adequate situational awareness is a central concern for commanders and staffs. A well-developed, exercised, component-compatible CBRN warning and reporting system provides a significant measure of protection by assisting forces to avoid the hazard. Accurate and timely understanding of the hazard and its effects minimizes the possibility of either excessive or inadequate protection of the force, maintaining a protective posture longer than necessary, or misusing scarce CBRN defense assets, such as early warning, detection, reconnaissance, surveillance, and decontamination units. These assets are combat multipliers and must be managed effectively to support the campaign plan and protect capabilities with high vulnerabilities to the effects of CBRN weapons.

5-7. SOF missions must plan for medical support, to include management and treatment of casualties, and the impact of CBRN casualties on a mission. Medical CBRN defense should be fully integrated into the deliberate planning process to maximize readiness. Key elements include casualty estimation, prophylaxis, diagnostics, mass casualty management, evacuation of contaminated patients, patient decontamination, evacuation of decontaminated patients to medical treatment, and requirements for stand-by or surge medical operations. The GCC's planning should recognize that CBRN attacks have the potential to create mass casualties. The treatment and evacuation of CBRN casualties will be difficult and hazardous both to the patients and to medical personnel.

5-8. Planners must ensure interoperability of SOF with conventional forces that either host or support their activities. Common standards for CBRN defense, especially training and equipment, must be established to maximize effectiveness and prevent inadvertent vulnerabilities in joint force capabilities. Gaps in the CBRN defense capabilities of multinational coalition forces must be addressed to ensure coalition cohesion and effectiveness in both planning and operations. This is especially true during time-critical contingency operations. For example, if SOF are operating from naval surface vessels during forced entry operations, SOF must be prepared to function compatibly with the host vessel in the areas of weapons, communications equipment, shipboard logistics, and CBRN defense procedures. Planners also must ensure interoperability of SOF with HN forces and equipment as listed in Figure 5-2.

1. Determine communications procedures and links to give deployed SOF elements CBRN situational awareness of the following:
   - Threat early warning.
   - Threat description (type, level, and estimated effects) and updates.
   - Situation-specific guidance on local CBRN response.
   - Primary U.S. or foreign agencies responsible for providing CBRN situational awareness.
2. Determine technical CBRN detection capabilities of HN.
3. Determine HN alarm signals and procedures.
4. Determine HN decontamination capabilities for personnel, aircraft, and equipment as follows:
   - Decontamination equipment type, condition, and availability.
   - Decontamination procedures.
   - Levels of HN training: currency and proficiency.
   - HN plans or capability for decontaminating HN personnel.
   - Estimated overall effectiveness of HN decontamination capability.
5. Determine specialized decontamination equipment and procedures SOF elements must possess while residing on HN installations.
6. Determine HN equipment compatibility: air and ground components.
7. Consider the emergency recall requirements for unsupportable CBRN hazard situations.

Figure 5-2. HN interoperability considerations

5-9. Regardless of the level of security involved, key planners from all disciplines (for example, intelligence, fire support, communications, logistics, PSYOP, CAO) must be involved in all phases of SOF mission planning. Commanders should evaluate all SOF operational mission criteria in considering mission advisability. SOF missions require clear rules of engagement (ROE) for execution that could encompass a diverse set of tasks as listed in Figure 5-3.

- Disabling or confiscating CBRN weapons and materiel, including emergency operations to dispose of dangerous materiel that cannot wait for normal processing.
- Detaining enemy or third-country nationals associated with CBRN weapons or who otherwise might be considered war criminals.
- Countering efforts to remove CBRN assets from an adversary country.
- Caring for displaced civilians and enemy prisoners of war (EPWs) IAW international law and interacting with nonmilitary entities, especially to provide information to international organizations and news media to counter disinformation efforts related to CBRN weapons.
- Giving special considerations for American citizens, ambassadors, and precious cargo, to include medical care and IPE.

Figure 5-3. CBRN-related sites considerations

CBRN STAFF RESPONSIBILITIES

5-10. The planning of SOF missions involves many staff elements. Each is skilled in a specific area that enables the planning team to analyze issues and to meet mission objectives. The staff elements are discussed below with emphasis being on their CBRN duties.

5-11. When faced with an enemy willing to use CBRN weapons to produce mass casualties, the ***S-1*** needs to be exploring short-notice personnel replacements for SOF personnel as well as CBRN defense units. In the law enforcement arena, the S-1 should consider that current doctrine requires providing CBRN protection and training for EPWs.

5-12. The ***S-2's*** primary concern is determining the enemy's CBRN capabilities and intent, such as weapon inventory, location, and likelihood of employment (how determined the enemy is to use it). An S-2 works with the CBRN special staff who analyzes and interprets how weather and terrain may determine where CBRN weapons could be used against friendly forces (participate in a CBRN vulnerability analysis), as well as develop CBRN specific priority intelligence requirements and intelligence requirements. The S-2 ensures that the statement of intelligence interest includes CBRN capabilities. Also, the S-2 considers possible collateral damage to friendly troops and noncombatants if attacking CBRN storage and delivery areas, and industrial targets that house toxic chemicals.

5-13. The ***S-3*** analyzes how to develop the CBRN defense task organization for components, analyzes the effects that a CBRN attack will have on friendly COAs, and recommends actions in response to a CBRN attack.

5-14. The ***S-4*** develops policy for linking HN civil defense support, as well as equipping and training identified mission-critical civilians, contractors, third-country nationals, and DOD personnel. S-4 logistics planning should include component liaison officers (LNOs) to facilitate component support. In addition, the S-4 ensures that a CBRN logistic system for supplies and repairs is in place and ready to perform. The S-4 coordinates and monitors the status of equipment, expenditure of IPE and supplies, and the movement of CBRN assets. The S-4 may also be required to locate and use alternate main supply routes due to CBRN contamination and to critique plans based on CBRN equipment shortages. The S-4's engineers assist in the construction of decontamination sites. The S-4's transportation personnel keep ports and airfields operational and clear of contamination. The surgeon oversees S-4 medical issues.

5-15. The ***S-5*** ensures that CBRN considerations have been included in both OPLANs and concept plans. The S-5 coordinates HN approval of decontamination sites, operations, and equipment or facility support. The S-5 must participate in recommending the GCC's response to CBRN attacks. When developing COAs, the S-5 must consider both previous CBRN employment and possible future CBRN employment by enemy forces. The S-5 also develops the friendly force nuclear weapon employment policy for the theater if an authorization for use is received from the President of the United States or Secretary of Defense.

5-16. The ***S-6*** focuses on the theater forces' ability to send and receive CBRN reports. This includes having a dedicated net (if deemed necessary by the GCC) for CBRN reporting and ensuring that components have communications capabilities to communicate with both joint and multinational forces.

5-17. The ***S-9*** (CMO) personnel must be prepared to negotiate for HNS, particularly in the areas of loading and unloading ships and planes, as well as decontamination assistance. CA personnel also deal with issues such as providing protective equipment to civilians, HNS personnel, and multinational members.

5-18. The ***chemical officer*** ensures CBRN-trained personnel are used as subject matter experts (SMEs) prepared to advise the commander and staff as to the effects of CBRN on all aspects of a mission. A chemical officer must ensure the coordination between SOF elements, multinational forces, and HN assets for CBRN equipment, information dissemination, defensive operations, and emergency response. Special plans are also included to protect nonmilitary personnel from CBRN threats.

5-19. The ***surgeon*** ensures that medical personnel within the theater are prepared to provide medical support for CBRN injuries and contaminated casualties. The surgeon ensures the immunization status of the medical staff members, as well as all military personnel for whom the surgeon is responsible. In addition, the surgeon coordinates the availability of Class VIII medical supplies. Medical personnel must be briefed on agent symptoms and be aware of known enemy CB agents within the theater, as well as radiation exposure limits. Biological agent symptoms could be misdiagnosed as common cold symptoms until it is too late. Quantities of antidotes and related treatment supplies must be on hand, and resupply ordered. In addition, the medical staff supports the theater mortuary affairs staff to ensure contaminated remains are properly handled and evacuated.

5-20. The fear of the horrific capability of CBRN weapons can cause panic in many groups. ***PSYOP personnel*** must be prepared to educate and reduce fears in friendly populations. They should also be prepared to work with the PA element in creating themes that will spur public condemnation of the adversary for the use of WMD.

5-21. The ***PA section*** prepares to issue press releases dealing with U.S. policy regarding the use of CBRN weapons, as well as explaining the nature of such weapons. This publicity can help gain support for the United States around the world. The PA staff should also be prepared to release articles showing how the United States prepares and trains for this type of warfare. These articles and releases are coordinated with higher HQ before release to the media. This effort, in turn, can help deter the enemy from using such weapons against the United States.

5-22. The ***legal officer*** prepares to advise the GCC on the ROE for nuclear weapons, as well as RCAs IAW EO 11850. In addition, the legal officer prepares to advise on the furnishing of CBRN training and equipment to civilians and the legal ramifications of attacking CBRN or industrial targets. The joint force will require a clear ROE for execution of their mission, which could encompass a diverse set of tasks. Figure 5-3, page 5-6, addresses additional ROE considerations.

5-23. The ***chaplain*** can contribute to maintaining morale when faced with mass casualties using CBRN weapons. In addition, by continuing to provide religious services, even if in MOPP4, the chaplain provides an important spiritual need for the troops.

MISSION PREPARATION

5-24. At this stage of premission activity, SOF refine support requirements and tailor training to the CBRN mission requirements discussed in the following paragraphs.

INTELLIGENCE SUPPORT OF SOF

5-25. Timely, detailed, tailored, and fused all-source intelligence is vital in identifying relevant targets, COA development, and mission planning and execution. The ability to interface with theater and national intelligence systems and assets is critical for SOF mission success. Additionally, SOF mission accomplishment may hinge on target or intelligence updates provided by other government agencies. A SOTF, if formed, must also have these same interfaces.

5-26. The nature of many SOF objectives and tactics require intelligence support that is frequently more detailed than that needed in conventional operations. SOF often require intelligence to avoid enemy forces, regardless of size or composition, as opposed to information that would allow conventional forces to engage an enemy.

5-27. Intelligence support to SOF requires an expanded focus of the standard scope of intelligence functions. This fact is particularly true in FID operations where intelligence must contain aspects related to political, informational, economic, and cultural institutions and relationships, as well as enemy and friendly forces and target-specific data.

5-28. SOF missions are particularly sensitive to HN and enemy collection efforts. Counterintelligence support is also considered in protecting sensitive SOF missions across the range of military operations.

5-29. Commanders at all levels should fully understand the capability and effectiveness of HN intelligence and security services to collect information on SOF units and personnel.

Note. For additional specific guidance on intelligence support, refer to JP 3-05 and the JP 2-0 series of publications.

METEOROLOGICAL AND OCEANOGRAPHIC SUPPORT OF SOF

5-30. Meteorological and oceanographic (METOC) support services are critical to the success of SOF missions. From initial planning through execution, environmental intelligence should be included in the decision-making process. Unique local conditions may expedite or negate a particular COA. A study of general climatology, hydrography, and specific weather forecasts for the AO may provide the commander with the information necessary to choose the best windows of opportunity to execute, support, and sustain specific operations. Potentially, the execution decision may be based on exploiting certain adverse weather and METOC conditions to provide cover for operations while avoiding those environmental conditions that will hamper operations. However, these decisions often require finesse and judgment to ensure that, while the weapon systems are operating near their environmental limits, they do not exceed them. With the increased reliance on space capabilities, the SOF commander must also be kept informed of environmental effects on space operations. METOC support personnel can also provide information that will allow the SOF commander to plan for the possibility of the loss of one or more critical space-based systems.

LOGISTIC SUPPORT OF SOF

5-31. The, theater special operations command (TSOC) or the JSOTF commander determines SOF in-theater logistic requirements for the GCC. Logistic support for SOF units is provided through one or more of the following functional areas.

Service Support

5-32. The logistic support of SOF units is the responsibility of their parent Service, except where otherwise provided for by support agreements or other directives. This responsibility exists regardless of whether the SOF unit requiring support is assigned to the Service component, the SOC, the joint force special operations component command, or a JSOTF. SOF logistic support includes the sustainment and replenishment of all classes of supply, maintenance, transportation, facilities, and services.

Joint In-Theater Support

5-33. The majority of SOF missions require joint logistic planning and execution. When the theater Service component cannot satisfy its Service SOF support requirements, the GCC determines if another Service component can satisfy the requirement through common or joint servicing arrangements. Joint logistic arrangements also may be used when normal Service support cannot satisfy requirements. SOF often require nonstandard arrangements when operating in locations geographically separated from established theater Service support infrastructures. GCCs and theater Service component commanders, in coordination with the TSOC, ensure that effective and responsive SOF support systems are developed and provided.

SO-Peculiar Support

5-34. SO-peculiar equipment, materials, supplies, and services are defined, as those items and services required for SOF mission support for which there is no broad conventional requirement. Responsibility for developing and acquiring SO-peculiar equipment and for acquiring SO-peculiar materials, supplies, and services belongs to the USSOCOM CCDR. This support will be provided to theater-deployed SOF via USSOCOM Service component logistic infrastructures and in coordination with theater Service components.

Note. For additional discussion of SOF logistics support, see FMI 3-05.140, *Army Special Operations Forces Logistics*.

COMMUNICATIONS AND SYSTEMS SUPPORT OF SOF

5-35. Communications systems support to SOF is global, secure, and jointly interoperable. It must be flexible so that it can be tailored to any mission and add value to the SOF operational capability. Communications systems support the full range of SO worldwide. Normally, C2 of SOF is through SOF channels. SOF must be able to communicate anywhere and anytime using national capabilities to the maximum extent possible. The SOF operational unit must have a variety of methods for communicating, reporting, and querying available resources, regardless of geographic location. Communications systems must never compromise the SOF operational unit.

5-36. SOF communications systems support consists of multiple and varied groups of systems, procedures, personnel, and equipment that operate in diverse manners and at different echelons, from national to unit levels. Communications systems support discrete as well as collective functions. SOF missions normally are controlled at the lowest level that can accomplish the needed coordination, although political considerations may require control at higher national levels. To provide for necessary control, SOF communications systems offer seamless connectivity from the lowest to the highest levels.

5-37. SOF communications systems must be interoperable with each other, with conventional forces, with U.S. national resources, and with allies and HNs. SOF communications systems must integrate not only with state-of-the-art systems (the CBRN warning and reporting system), but also with less sophisticated equipment often found in less developed nations.

PSYOP and CAO Support

5-38. The TSOC submits requests for PSYOP and CAO support to the supported GCC, who consolidates, validates, and submits the requests to the joint staff for a deployment order or as part of an overall OPLAN. PSYOP and CAO support will be provided to the TSOC based on mission requirements, availability, and priorities established by the GCC or SOTF commander. CAO and PSYOP support provide the SOF commanders and their indigenous counterparts the ability to motivate and mobilize crucial segments of the population to enhance the probability of mission success.

> ***Note.*** FM 3-05.30, *Psychological Operations*, and FM 3-05.40 contain a more detailed discussion of PSYOP and CAO support.

Public Affairs Support of SOF

5-39. The political sensitivity of many SO, especially in peacetime, mandates that thorough and accurate PA guidance be developed during the operational planning stage and approved for use in advance of most operations. PA planning should accurately reflect the objective of the mission for domestic audiences and be consistent with both the overall PSYOP effort and operations security requirements. The commander having operational authority develops proposed PA guidance that is coordinated with supporting commands and government agencies, as appropriate, before forwarding that guidance to the Assistant Secretary of Defense (Public Affairs) for approval.

> ***Note.*** FM 3-61.1, *Public Affairs Tactics, Techniques, and Procedures*, contains additional information regarding PA support of SOF.

Legal Support of SOF

5-40. SOF missions frequently involve a unique set of complex issues. There are federal laws and executive orders, federal agency publications and directives, and theater ROE that affect SOF activities. These guidelines become especially important during sensitive peacetime operations when international and domestic laws, treaty provisions, and political agreements affect mission planning and execution. Commanders must seek legal review during all levels of planning and execution of SO missions, to include planning of the theater ROE.

Space Support of SOF

5-41. As space-based support to military operations continues to improve, SOF commanders and planners should be aware of potential space support operations and their integration with SO.

COMBAT CAMERA SUPPORT OF SOF

5-42. Combat camera use provides still and video documentary products that support PSYOP and other SO missions. Many teams supporting SOF are specially equipped with night vision and digital image transmission capabilities. Combat camera also provides gun-camera image processing for theater and national use. Combat camera imagery is used to show allies, adversaries, and civilian populaces the effects of U.S. operations and to counter enemy disinformation with on-screen or gun-camera evidence.

MEDICAL SUPPORT OF SOF

5-43. SOF medical support is characterized by an austere structure and limited number of medical personnel with enhanced medical skills. SOF medical personnel provide emergency treatment and a basic level of medical care at the team level. Medical support provided to SOF units in the AO is planned and conducted by SOF surgeons and medical personnel. Provision of medical support beyond this capability depends on the thoroughness of advanced planning so that the conventional medical support structure umbrella is extended to cover the lack of internal capability or to meet requirements for additional medical assets, such as antidotes (nonorganic), advanced trauma life support, surgical intervention, evacuation, and medical logistics. Certain operations also may require security requirements be in place to preclude compromising the names of SOF personnel upon entry into the conventional medical system. Preparation includes prophylaxis and the practice of certain CBRN procedures to achieve a level of proficiency that allows safe mission accomplishment. Medical personnel must be briefed on agent symptoms and known enemy chemical and biological agents within the theater. As mentioned earlier, the early stages of biological agent symptoms can be misdiagnosed as common cold symptoms.

PLANNING FOR CBRN SUPPORT AND INTERFACE

5-44. The inherent qualities of SO involve detailed planning and foresight. Intelligence preparation of the SO area is critical to all planning when an AO contains a CBRN threat. The operational commander uses this intelligence information while formulating a risk assessment (Appendix D). Based upon his assessment, decisions will be made that involve tradeoffs between the amounts of protective equipment, rations, ammunition, and supplies that can be carried and yet allow mission completion.

5-45. SOF CBRN planners should determine who their adjacent units are for a mission and then plan, coordinate, integrate, synchronize, and execute (PCISE) with those units throughout the operation to ensure streamlined and effective planning. Figure 5-4, page 5-12, lists the tasks involved in PCISE.

CBRN SAMPLING TECHNIQUES

5-46. SOTF commanders may receive the mission to collect materiel and environmental samples as evidence to support intelligence and operational requirements to substantiate that a CBRN attack has occurred, provide field identification of agents used, survey the degradation of such products, or identify delivery systems and their nation of origin. Sampling operations are particularly important if a potential adversary uses previously unknown agents or if an adversary allegedly uses a CBRN agent first. Therefore, the collection of samples and background information must be as detailed and comprehensive as possible.

5-47. An adversary may use RAs to restrict the use of terrain or to cause delayed casualties. Further, residual radiation from RAs can potentially result in high dosages for those who operate in the RA-contaminated area. A SOF element may collect samples to verify the use of RAs and to identify the radionuclides of the RAs.

CBRN SAMPLING OPERATIONS

5-48. The data from sampling operations supports the intelligence preparation of the operational environment (IPOE) process and directly relates to ongoing and future operations. Sampling operations may be done to—

- Collect baseline bioenvironmental samples for background levels of indigenous biological material in a given area.

- Collect and identify suspected CBRN samples, such as chemical, biological, environmental (soil, air, liquids, vegetation), and anatomical samples (tissue) from animals or suspected contaminated animal specimens.
- Collect radiological agent samples, such as radiological agents spread throughout an area as radioactive dust particles, pellets, or industrial waste.
- Provide preliminary identification of chemically or biologically contaminated samples.

PLANNING

- Make an estimate of the situation.
- Determine the concept of the operation.
- Determine the decisive point and identify the main and supporting efforts.
- Outline the who, what, when, where, why, and how, to include the following:
  - Assign missions to subordinate units.
  - Task-organize.
  - Allocate resources.
  - Identify support requirements.
- Continue planning contingency and implied follow-on missions.

COORDINATING

- Manage terrain.
- Produce and disseminate OPORDs, plans, fragmentary orders (FRAGORDs), and other directives.
- Request, receive, emplace, brief, and task additional assets from higher HQ.
- Support subordinate-unit requirements, manage problems with adjacent units, and inform higher HQ of battalion plans and intent. Send LNO to higher and adjacent units.
- Tie-in support requirements.

INTEGRATING

- Maintain close contact and exchange information with all staff members at higher HQ, subordinate units, and attached chemical support units. Exchanges include personal visits and radio or written communications.
- Distribute essential information, decisions, orders, and plans.
- Attend formal and informal conferences, and provide input.
- Participate in briefings and establish message control procedures.
- Perform liaison duties, when appropriate.

SYNCHRONIZING

- Arrange activities in time, space, and purpose to produce the maximum relative combat power at the decisive point.

EXECUTING

- Implement the commander’s guidance and intent for effects.
- Ensure targeting partners have well-defined definitions or methods for describing the effects their specialty brings to bear on the operation.
- Integrate multiple staff sections and organizations into an effective effects organization.

Figure 5-4. PCISE tasks

Note. Special CBRN reconnaissance tasks include sampling operations, CBRN-related technical evaluation and observation, and advice and training on special CBRN reconnaissance skills.

5-49. A CRD may augment a SOF element conducting a unilateral collection mission, such as technical observations to support surveillance of known or suspected CBRN facilities in hostile areas where the threat precludes the use of other human intelligence means. The CRD may provide CBRN technical training to SOF elements if the mission requirements prevent the CRD from augmenting the element. Also, the detachment may provide CBRN defensive skills training to HN personnel if the HN personnel speak English or if language support is provided and HNS agreements allow such training.

Note. See Appendix E for further information on SOF CBRN advanced sampling TTP. For additional sampling information, refer to FM 3-05.204, and FM 3-11.19, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance*.

SOF-UNIQUE CBRN TECHNIQUES

5-50. A SOF element uses decontamination procedures modified to fit the peculiar situation of the element. SOF elements may be in denied or hostile territory and therefore, require a high degree of stealth in all phases of a mission. The modified decontamination procedures described herein do not compromise the critical survival principles of stealth, contamination avoidance, or preventing the spread of contamination throughout the AO. These procedures may be modified to accommodate the addition of site entry and security personnel who might be added to the mission profile.

5-51. Commanders must evaluate the threat, tactical situation, and decontamination system availability when deciding how to decontaminate. A SOF element entering a contaminated environment to conduct a mission or becoming contaminated while operational has three options for decontamination:

- Unsupported SOF element decontamination.
- Expedient personnel decontamination system.
- Dirty exfiltration decontamination.

Note. Appendix F explains the procedures to conduct SOF element decontamination options.

This page intentionally left blank.

Chapter 6

Technical Augmentation and Reachback Capability

Multiple capabilities exist within the DOD to support CBRN consequence management (CM). This chapter provides a representative list of units or activities that can support CBRN reachback. Comprehensive listings of Service capabilities are identified in applicable operational plans at the strategic and operational levels.

U.S. ARMY TECHNICAL ESCORT SUPPORT

6-1. The Army TEU supports GCCs with such capabilities as reception, staging, onward movement, and integration; communications; and limited decontamination, packaging, and transport of CBRN dispersal device remnants. The TEU provides CBRN advice and support to both CRDs and CDDs, as well as other SOF units. Types of support include secure reachback capabilities, CBRN assessments, and chemical or explosive ordnance disposal (EOD) expertise.

6-2. TEUs deploy teams to conduct technical escort, CBRN hazard characterization, monitoring, disablement, elimination support operations, WMD and CBRN incident emergency response, and contingency support operations to GCCs and lead federal agencies. Additionally, TEUs provide site remediation and restoration support operations for DOD.

6-3. CRDs were modeled after TEU teams but do not have the same capabilities. CRDs are a forward-deployed tactical detachment, whereas TEU, although capable of operating in hostile environments, has enhanced technical capabilities. If a CRD conducts a mission to remove a hazardous substance, they will relinquish custody to a TEU at some point of the transfer of the HAZMAT.

6-4. TEU team members provide technical advice on CBRN material by using real-time reachback capabilities. Advice provided includes the following:

- The physical characteristics of the agent can indicate where the agent may spread, based on the weather conditions. This information provides the command element a means to cordon off safe distances and establish isolation zones.
- The physical characteristics of the agent can also determine packaging and transportation requirements if the agent is to be sampled or shipped elsewhere.
- Permissible exposure limits can be provided to determine the appropriate level of PPE required to enter the contaminated area.
- Appropriate decontaminants for the specific agent can be identified in order for the unit to decontaminate their personnel and equipment.

EOD AUGMENTATION

6-5. In addition to chemical personnel, TEUs have EOD personnel assigned to their teams. The EOD personnel can identify and render safe any munitions for movement to a safe storage location. TEU teams have the ability to identify and assess munitions internally and externally using nonintrusive technology to maintain the safety of any assets in the munitions area. They conduct the following tasks:

- During initial assessment, teams visually inspect munitions for leaks and fuze conditions. Chemical munitions may be identified by munition markings or through the use of gross or low-level monitoring equipment that will identify leaking munitions.
- If fuze condition and fill type cannot be determined by visual inspection or initial monitoring, the team can X-ray the munition to determine fuze condition and fill type (liquid or solid).

- After identifying a liquid in a munition, the team can analyze the liquid using ionization. This method can identify the chemical makeup of the liquid inside. This information will further assist the team in providing a recommendation for the disposition of the munition.

6-6. For a munition that is identified as chemically filled, the team can mitigate the initial hazards, perform leak-seal, if any, and properly package the munition for transportation. These procedures will ensure that the munition is safe to move without spreading contamination.

6-7. Once the munition has been packaged for transportation, the team can escort the munition to either a transfer point, to return to their supported unit, or to an authorized storage location.

TECHNICAL REACHBACK CAPABILITY

6-8. Reachback is a process that uses communications assets to identify and bring to bear resources, not present at the site, that support CBRN team operations. Technical reachback is contacting technical SMEs when a technical issue exceeds the on-scene SME capability. Reachback should be conducted using the established unit protocols. Many of the listed reachback resources have other primary missions and are not specifically resourced for reachback.

6-9. The National Response Center (NRC) manages the hotline service and serves as an emergency resource for first responders to request technical assistance during an incident. The intended users include trained emergency personnel, such as firefighters, police, and emergency medical technicians who arrive at the scene of a CB terrorist incident. Other potential users may include the state emergency operations center (EOC) and hospitals that may treat victims of agent exposure.

6-10. The United States Coast Guard (USCG) operates the NRC, and trained operators staff the hotline, 24 hours a day, 7 days a week. Operators use extensive databases and reference material in addition to having immediate access to the nation's top SMEs in the field of CB agents. NRC duty officers take reports of actual or potential domestic terrorism and link emergency calls with applicable SMEs (such as U.S. Army Research, Development, and Engineering Command and the U.S. Army Medical Research Institute for Chemical Defense) for technical assistance and with the Federal Bureau of Investigation (FBI) for federal response actions. The NRC also provides reports and notifications to other federal agencies, as necessary. Specialty areas include the following:

- Detection equipment.
- PPE.
- Decontamination systems and methods.
- Physical properties of CB agents.
- Toxicology information.
- Medical symptoms from exposure to CB agents.
- Treatment of exposure to CB agents.
- Hazard prediction models.
- Federal response assets.
- Applicable laws and regulations.

6-11. The CB hotline is a joint effort of the USCG, FBI, Federal Emergency Management Agency, Environmental Protection Agency (EPA), Department of Health and Human Services, and DOD. The NRC is the entry point for the CB hotline. It receives basic incident information and links the caller to the DOD and FBI CB and terrorism experts. These and other federal agencies can be accessed within a few minutes to provide technical assistance during a potential CB incident. If the situation warrants, a federal response action may be initiated.

Hotlines and Agencies

Use the local established policies and procedures for requesting federal assistance before contacting the CB hotline. State and local officials can access the hotline in emergency circumstances by calling 1-800-424-8802.

- **20th Support Command (SUPCOM) CBRNE Operations Center.** The USA 20th SUPCOM operations center provides an avenue to request assistance from U.S. Army TE battalion and EOD units. The hotline is manned and operated 24 hours a day, 7 days a week. Assistance from 20th SUPCOM can be obtained by calling 1-410-436-4484.
- **Defense Threat Reduction Agency.** DTRA can provide technical reachback information and services for on-scene personnel. The focal/coordination point for support is through the DTRA EOC or by calling 1-877-244-1187.
- **Armed Forces Radiobiology Research Institute (AFRRI).** The AFRRI can provide DOD technical support capability for nuclear and radiological incidents or accidents. Assistance can be obtained by calling 1-301-295-0316/0530.
- **United States Army Medical Research Institute of Infectious Diseases (USAMRIID).** The USAMRIID provides medical and scientific SMEs and technical guidance to commanders and senior leaders on the prevention and treatment of hazardous diseases and prevention, and the medical management of biological casualties. The USAMRIID serves as the DOD reference center for the identification of biological agents from clinical specimens and other sources. It can provide technical guidance for assessing and evaluating a biological terrorist incident from initial communication of the threat through incident resolution. Assistance may be obtained by calling 1-888-872-7443.
- **United States Army Medical Research Institute for Chemical Defense (USAMRICD).**The USAMRICD provides medical and scientific SMEs and technical guidance to commanders and senior leaders on the prevention and treatment of chemical casualties. It serves as the DOD reference center for the identification of chemical agents from clinical specimens. The USAMRICD can provide technical guidance for assessing and evaluating a chemical terrorist incident from initial communication of the threat through incident resolution. Assistance may be obtained by calling 1-800-424-8802.

This page intentionally left blank.

Appendix A
Unit and CBRN Organic Support

COMMON DETECTION EQUIPMENT

1. **Chemical Agent Detector Paper, M8.** NSN: 6665-00-05-0829. M8 is chemically treated, dye impregnated paper. It detects liquid V and G (nerve), and H (blister) CW agents. It does not detect vapors or agents in water. Exposure to liquid insecticides, antifreeze, and petroleum products may cause false readings (Navy nonasset).
2. **Chemical Agent Detector Paper, M9.** NSN: 6665-01-049-8982, TM 3-4230-229-10. M9 detector paper detects the presence of liquid chemical agents (nerve and blister), but does not identify the specific agent or its type. M9 paper reacts to CW agents by turning a reddish color. Exposure to liquid insecticides, antifreeze, and petroleum products may cause false readings. The paper can be attached with an adhesive back.
3. **Chemical Agent Automatic Alarm, M8A1.** NSN: 6665-01-105-5623, TM 3-6665-312-12&P. The M8A1 is a nerve agent alarm. The system consists of the M43A1 detector, as many as five M42 alarm units, and various power supplies.
4. **Remote Sensing Chemical Agent Alarm, M21.** NSN: 6665-01-302-1968. The M21 is a two-man-portable, passive infrared sensor that detects nerve and blister agent vapor clouds from a distance of 3 to 5 kilometers. It can be used for reconnaissance and surveillance missions. It consists of a detector, tripod, M42 remote alarm unit, transit case, power cable assembly, and standard military power source (Air Force [AF] nonasset).
5. **Automatic Chemical Agent Detection Alarm, M22.** The M22 is an advanced point-sampling, chemical agent alarm system. It detects standard nerve and vesicant agents. The system consists of the detector, as many as five alarm units, and various power supplies. This system replaces the M8A1 alarm in most SOF units (Navy Special Operations Forces [NAVSOF] nonasset).
6. **CBRN Reconnaissance System FOX, M93A1.** NSN 6665-01-323-2582, FM 3-11.3, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance*. The FOX (M93A1) is a fully integrated CBRN reconnaissance system with a dedicated system of CBRN detection, warning, and sampling equipment integrated into a high-speed, high-mobility armored carrier. Its components include a Mobile Mass Spectrometer (NAVSOF and AF nonasset).
7. **Chemical Agent Detector Kit, M256A1.** NSN: 6665-01-016-8399, TM 3-6665-307-10. The M256A1 chemical agent detection kit is designed to detect and identify blood (AC and CK), blister (H, HN, HD, CX, L), and nerve (V and G series) agents, and consists of a carrying case, 12 sampler-detectors, instruction cards, and M8 paper.
8. **Water Testing Kit for Chemical Agents, M272.** NSN 6665-01-134-0885, TM 3-6665-319-10. The M272 is a lightweight, portable kit that detects and identifies harmful amounts of CW agents present in raw and treated water. It detects AC, HD, L, and nerve agents (Navy nonasset).
9. **Chemical Agent Monitor.** NSN: 6665-01-199-4153. The CAM is used to search and locate contamination, specifically nerve and blister agents. It is a battery-operated, portable-point monitoring system. It cannot realistically assess the vapor hazard over an area from one point. It weighs 8.6 pounds (AF nonasset).
10. **Individual Chemical Agent Detector (ICAD).** NSN 6665-01-340-1693. ICAD is a miniature chemical agent detector for nerve, blood, choking, and vesicant/blister agents. The ICAD has a slower detection response time for some agents and may not be suitable for individual FP missions in certain roles (Army and AF nonasset).
11. **Improved Chemical Agent Monitor (ICAM).** NSN 6665-01-357-8502. The ICAM merges two improvements to the CAM. These improvements are a modular design and an updated electronics board. The modular design significantly reduces repair time (NAVSOF and AF nonasset).

COMMON PROTECTION EQUIPMENT

1. **Protective Mask, M24.** NSN 4240-00-808-8799, TM 3-4240-280-10. The M24 mask protects personnel in aircraft and on the ground against all known CB aerosols and vapors. It can be attached to the aircraft oxygen system using an M8 adapter kit (AF and NAVSOF nonasset).
2. **Protective Mask, M40A1.** NSN 4240-01-258-0061, TM 3-4240-342-10. The M40A1 mask protects against CB agents, radioactive fallout particles, and battlefield contaminants. It has a silicone face piece, binocular lens system, voicemitter, drink tube, clear and tinted inserts, and standard thread filter canister.
3. **Combat Vehicle Crewman Mask, M42.** NSN 4240-01-258-0065, TM 3-4240-342-10. The M42-series mask has the same components as the M40 with an additional built-in microphone for wire communications. The filter canister is attached to the end of the hose with an adapter for CPFU connection (AF and Navy nonasset).
4. **Aircrew Protective Mask, M43.** NSN 4240-01-208-6966. The M43 mask has a form-fitting, butyl-rubber facepiece with a lens mounted close to the eyes, an integrated hood with a skull-type suspension system, a portable battery or power-operated blower and filter system, and an inhalation air distribution assembly (AF and Navy nonasset).
5. **General Aviator Protective Mask, M48,** NSN 4240-01-386-4686, TM 3-4240-342-20&P; **M49**, NSN 4240-01-413-4096, TM 3-4240-342-20&P. The M48 and M49 masks are an upgrade of the M43 Type I mask. Its improved blower is chest-mounted. The blower is lighter, less bulky, and battery-powered (AF and Navy nonasset).
6. **Protection Assessment Test System (PATS), M41.** NSN 4240-01-0365-8241, FM 3-11.4. The M41 is used to check the face seal of protective masks (NAVSOF nonasset).
7. **Aircrew Uniform Integrated Battlefield (AUIB).** The AUIB is a standard combat uniform for aircrews. It replaces both the battle dress overgarment (BDO) and the NOMEX flight suit, and provides CBRN and flame protection (AF and NAVSOF nonasset).
8. **BDO.** NSN 8415-01-137-1704, FM 3-11.4. The BDO is a camouflage, expendable, two-piece overgarment. It protects for 24 hours against chemical agent vapors, liquid droplets, biological agents, and radioactive particles. Maximum wear time is 30 days in an uncontaminated environment (NAVSOF nonasset).
9. **Chemical Protective Glove Set.** NSN 8415-01-033-3518. This protective glove set consists of an outer butyl-rubber glove and an inner cotton insert.
10. **Chemical Protective Footwear Cover (CPFC).** NSN 8430-01-021-5978, FM 3-11.4. CPFCs are impermeable and have unsupported butyl-rubber soles and uppers. Two variations are fielded: one with a single-heel flap, and the other with the newer fishtail double-heel flap (NAVSOF nonasset).
11. **Green/Black Vinyl Overboot (GVO/BVO).** NSN 8430-01-048-6305. The GVO is olive-drab with elastic fasteners. It protects against CBRN agents, rain, mud, or snow. The BVO is very similar, except it is black with enlarged tabs on each elastic fastener.
12. **Joint Services Lightweight Suit.** The JSLIST program, a four-Service effort to field a common chemical protective ensemble, has produced a new protective overgarment that is currently being fielded. Testing continues on the glove and boot. Program objectives include reduced heat stress, compatibility with all interfacing equipment, longer wear, and washability.
13. **Simplified Collective Protective Equipment (SCPE), M20A1.** NSN 4240-01-166-2254, FM 3-11.4. The SCPE consists of an expandable liner, blower/motor assembly, protective entrance, support kit, and replacement liners. It is lightweight and mobile, allowing for the conversion of existing structures into protected C2 centers (AF and Marine nonasset).

COMMON DECONTAMINATION EQUIPMENT

1. **Portable Decontamination Apparatus, M11.** NSN 4230-00-720-1618, TM 3-4230-204-12&P. The M11 decontaminates small areas that personnel must touch. It is a steel container with an aluminum, spray head assembly and a nitrogen gas cylinder that provides pressure. It is filled with 1 1/3 quarts of DS2, enough to cover 135 square feet (AF and NAVSOF nonasset).
2. **Power-Driven Decontamination Apparatus, M12A1.** NSN 4230-00-926-9488, TM 3-4230-204-12&P. The M12A1 is power-driven and includes a pump unit, heater unit, 500-gallon tank unit, and personal shower unit (SOF and AF nonasset).
3. **Portable Decontamination Apparatus, M13.** NSN 4230-01-133-4124, TM 3-4230-214-12&P. The M13 is used to decontaminate vehicles and crew-served weapons larger than .50 caliber. It is about the size of a 5-gallon gasoline can and comes prefilled with 14 liters of DS2. Decontamination capability is 1200 square feet (AF and NAVSOF nonasset).
4. **Lightweight Decontamination System (LDS), M17.** NSN 4230-01-251-8702, TM 3-4230-228-10. The M17 is portable, lightweight, and consists of a combined pump and heater unit, 1,500-gallon or 3,000-gallon collapsible rubberized tank, and personal shower unit.
5. **Skin Decontamination Kit (SDK), M291.** NSN 4230-01-101-3984, TM 3-4230-216-10. The M291 is used for skin and equipment decontamination. It is nontoxic, eliminating the need for inert trainers.
6. **Decontamination Kit, Individual Equipment, M295.** NSN 6850-01-357-8459, FM 3-11.4. The M295 uses sorptive resin, unlike the liquid-based kits. It is a pouch, designed to fit in the cargo pocket of the BDU, and contains four individually wrapped, wipe-down mitts to decontaminate personal equipment.
7. **Decontamination Solution (DS2).** NSN 6850-00-753-4870, TB CML 113. DS2 is effective against all known chemical and biological agents except bacterial spores. It is issued in 1 1/3-quart cans (M11), 14-liter containers (M13), and 5-gallon containers. It is also extremely corrosive (AF and NAVSOF nonasset).
8. **Super Tropical Bleach (STB).** NSN 6850-00-297-6653, FM 3-11.5, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination*. STB is effective against lewesite, V and G agents, and biological agents. It ignites on contact with liquid mustard agent or DS2 (or any organic compound such as JP8, diesel, or any POL product).
9. **Calcium Hypochlorite (HTH).** NSN 6810-01-065-2410, FM 3-11.5. HTH is a decontaminant that is used only when STB is not available. It is effective against lewesite, V agents, and all biological materials, including bacterial spores. HTH ignites on contact with liquid mustard agent or DS2 (or any organic compound such as JP8, diesel, or any POL product). Personnel should observe the same precautions as for STB.

SOF DETECTION EQUIPMENT

1. **Biological Integrated Detection System (BIDS).** NSN 6665-01392-6191, TM 3-666-F349-12&P. BIDS is a self-contained biological detection lab mounted on a high mobility multipurpose wheeled vehicle (HMMWV). It has sample detectors, identification equipment, navigation devices, weather sensors, and communication links. BIDS is an Army Corps-level asset (SOF nonasset).
2. **Long-Range–Biological Standoff Detection System (LR–BSDS), M94.** FM 3-11.86, *Multiservice Tactics, Techniques, and Procedures for Biological Surveillance*. The M94 mounts on an airborne platform and detects biological clouds at a distance of up to 50 km. It is equipped with an infrared laser, receiver, and detector. The M94 also has an information processor for tracking and mapping functions. It does not identify biological agents. It identifies a cloud of biological-type material, but cannot distinguish whether this cloud is from BW or natural background causes. Further analysis is required from other assets (SOF nonasset).

SOF PROTECTION EQUIPMENT

1. **Apache Protective Mask, M45A1.** TM 3-4240-341-10. The M45A1 provides protection without the aid of forced ventilation air. It is compatible with aircraft sighting systems and night vision devices. It has close-fitting eyepieces, a voicemitter, a drink tube, and a low-profile filter canister.

2. **Simplified Collective Protective Equipment, M28.** NSN 42400-01-331-2938, FM 3-11.4. The M28 is a lightweight modular system. It has tent liners, hermetically sealed filter canisters, recirculation filters, and protective and tunnel entrances for litter patients. Improvements are a medical air lock, tent interface, and liquid agent resistance.

SOF-SPECIFIC EQUIPMENT

Chemical Protective Undergarment (CPU). FM 3-11.4. The CPU is an expendable, two-piece undergarment that is worn under a standard uniform. It protects for 12 hours against chemical agent vapors, liquid droplets, biological agents, and radioactive particles.

JOINT EQUIPMENT IN DEVELOPMENT

1. **Joint Biological Remote Early Warning System.** This system can detect the actual on-site presence or approach of biological agents, can collect samples to analyze for selected agents, and uses a sensor network command to provide early warning to take protective action. It consists of several monitoring units that can be used in the defense of large sites, such as airfields. A HMMWV and trailer are used to transport the system's components.
2. **Portal Shield, Sensor Network Command Post.** This shield is designed to detect and identify biological agents. It consists of several monitoring units that can be used in the defense of large sites, such as airfields. It is currently in the test phase of development.
3. **Joint Service Light CBRN Reconnaissance System (JSLCBRNRS).** NSN 6665-01-323-2582. JSLCBRNRS will detect, mark, and warn of CBRN hazards on the battlefield. The system will use the HMMWV and the light-armored vehicle as mobile platforms to move sophisticated sensors and analysis equipment on the battlefield (NAVSOF and AF nonasset).
4. **Modular Decontamination System (MDS).** MDS consists of a decontamination pumper and two high-pressure washer modules. Each module may be transported on a 3/4-ton trailer. MDS is supported by two 3,000-gallon, self-supporting fabric water tanks and one 125-gpm water pump (NAVSOF nonasset).
5. **Multipurpose Integrated Chemical Agent Detector (MICAD).** MICAD is a near-real-time integrated CBRN detection, warning, and reporting system. Using existing detectors, it automates data gathering, formats sensor data, transmits alarms, and issues CBRN1 and CBRN4 reports (NAVSOF nonasset).
6. **Joint Chemical Agent Detector (JCAD).** JCAD detects nerve and blister agents. It is lightweight, portable, and has interferant technology that reduces false alarms. JCAD will allow detection of emerging threat agents.
7. **Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD).** JSLSCAD is a passive, infrared detection unit that detects nerve and blister vapor clouds at a distance of up to 5 km while the detector is moving.
8. **Joint Biological Point Detection System (JBPDS).** JBPDS will provide common-point detection for all services. It will detect BW agents at low threshold levels and identify the agents within 15 minutes. Currently, three variants are planned: vehicle-mounted, man-portable, and handheld.
9. **Sorbent Decontamination System (SDS).** SDS includes CB decontaminants that increase decontamination efficiency, are less caustic, and require no water. Development goals include neutralization with less contact time, no scrubbing, fewer health risks, and improved storage stability.
10. **Joint CBRN Warning and Reporting System (JWARN).** JWARN is a system of computers, printers, and software. This equipment is tied together with communications that will enable personnel to rapidly detect, identify, and disseminate data on CB threats.

ARMY EQUIPMENT IN DEVELOPMENT

Soldier Hydration System. This method is a civilian style, camel-back system compatible with the M40 mask.

Appendix B

Personal Protective Equipment

PPE LEVELS

B-1. Military PPE is not effective for all TICs and TIMs. In some cases, it is necessary for CRD and CDD personnel to don civilian chemical equipment (CCE). CCE is mandated and certified by the Occupational Safety and Health Administration (OSHA). OSHA provides guidelines for selecting appropriate PPE and categorizes equipment ensembles into four levels, A through D. The uses at each level are explained in Figure B-1, and required equipment is outlined in Table B-1, page B-2.

Level A	● Hazardous substances have been identified and the highest level of protection is required for skin, eyes, and respiratory system. ● In any conditions in which the hazardous substance is unknown.
Level B	● Type and atmospheric concentration of substance have been identified. ● The highest level of respiratory protection is necessary. ● A lesser level of skin protection is needed. ● There is less than 19.5 percent oxygen. ● The HAZMAT is unknown and there is no direct skin contact or splash hazard.
Level C	● Types of contaminants are identified. ● Substances will not adversely affect or be absorbed through any exposed skin. ● Air purifying respirator (APR) is available that can remove the contaminants. ● All criteria for use of APR are met. ● There is more than 19.5 percent oxygen.
Level D	● When the atmosphere contains no hazard and when there is no potential for splashes, immersion, or unexpected inhalation of, or contact with, hazardous levels of any chemicals.

Figure B-1. Levels of PPE use

Note. Level D is generally considered a work uniform offering minimal protection.

PPE SELECTION AND USE

B-2. Personnel responding during the initial phase of a CBRN event or incident, when the agent or airborne concentration is unknown, should enter the exclusion zone using Level A or Level B PPE. A lesser level of protection is not acceptable unless air monitoring or a hazard analysis indicates otherwise.

B-3. The Emergency Response Guide (ERG) provides a reference for first responders during the initial phase of a TIM or risk of release other than attack incident, including initial isolation and minimum protective action distances and PPE. The ERG provides a quick cross-reference index for ID numbers, guide numbers, and alphabetical listing of names of materials that are then incorporated into a table of initial isolation and minimum protective-action distances to the 90th percentile (90 percent probability that hazard will not exceed these distances). The Web link for the ERG is http://hazmat.dot.gov/pubs.htm.

Table B-1. Required protective equipment

Equipment	Level A	Level B	Level C	Level D
Open-system breathing apparatus	X	X		
Air-purifying/powered respirator			X	
Totally-encapsulating chemical-protective suit	X	X		
Hooded chemical-resistant clothing	X	X	X	
Coveralls*		X	X	X
Face shield*		X	X	X
Escape mask*		X	X	X
Long underwear*	X	X	X	
Gloves, outer, chemical-resistant	X	X	X	
Gloves, inner, chemical-resistant	X	X	X	X
Boots, chemical-resistant, steel toe and shank	X	X	X	X
Boot covers, outer, chemical-resistant (disposable)		X	X	X
Hard hat*	X	X	X	X
Note. Equipment marked with an asterisk (*) is optional and task-dependent.				

CBRN INCIDENT CONCENTRIC AREAS

B-4. There are three concentric zones surrounding a CBRN incident: the hot zone (or exclusion area), the decontamination zone (or warm zone), and the support zone (or cold zone).

EXCLUSION AREA (HOT ZONE)

B-5. The exclusion area (hot zone) is the area surrounding the chemical release. This area is assumed to pose an immediate health risk to all persons, including rescuers.

B-6. When a chemical is unidentified, worst-case possibilities concerning toxicity must be assumed and Level A PPE (including pressure-demand self-contained underwater breathing apparatus [SCUBA]) worn, depending on the situation. When the chemical is a chemical warfare agent (CWA), Level A PPE should be worn during the initial response.

B-7. Supplied-air respirators (such as airline respirators) should not be used because the air hose may be degraded by chemicals or heat, the hose may become tangled, and such devices are not practical for operations during an emergency.

B-8. APRs are rarely appropriate for CBRN response because most CBRN incidents involve at least one of the following conditions which would preclude use of an APR:

- An oxygen-deficient atmosphere (less than 19.5 percent oxygen content).
- An unidentified contaminant.
- An unknown concentration of a contaminant.
- A concentration of contaminant above the National Institute for Occupational Safety and Health (NIOSH) Immediately Dangerous to Life or Health value.
- A high relative humidity.

DECONTAMINATION ZONE (WARM ZONE)

B-9. The decontamination zone (warm zone) is the area surrounding the hot zone where primary contamination is not expected, but where personnel must use protective clothing and equipment to avoid chemical exposure from contaminated victims.

B-10. Generally, the level of PPE is the same as that worn in the hot zone, unless professional judgment or air monitoring indicates a lower level of PPE is safe to use. A lower level of protective clothing can be used when the risk of secondary contamination is low. For example, a Level B nonencapsulating suit (National Fire Protection Association [NFPA] splash-protective suit) can be used if a Level A encapsulating suit (NFPA vapor-protective suit) is required in the hot zone. If the risk of inhaling gassing vapors is also low (that is, the chemical is not highly volatile or the decontamination area is set up outdoors with good natural ventilation), it may be acceptable to use a lower level of respiratory protection. Air contaminants should be identified and measured to assure safety before a lesser level of respiratory protection is used.

B-11. Medical personnel wearing respirators and heavy gloves will find it difficult to provide advanced medical care in the warm zone; therefore, this care is not administered until the victim is transferred to the cold zone (support zone). Electronic items, such as cardiac monitors, generally are not taken into the decontamination zone because the equipment may not be safe to operate and may be difficult to decontaminate.

B-12. Decontamination is not required for all victims. Victims exposed only to TIC gases or vapors that do not have skin or eye irritation generally do not need decontamination. Victims who have been decontaminated or who do not require decontamination should be transferred immediately to the support zone.

B-13. If potentially contaminated, medical personnel must be decontaminated. Many incidents have occurred involving seemingly successful rescue, transport, and treatment of chemically-contaminated individuals by unsuspecting emergency personnel who—in the process—contaminate themselves, the equipment, and the hospital where the patient is taken. Therefore, all patients (except those with life-threatening injuries) must be thoroughly decontaminated before admission into any medical treatment facility.

B-14. All potentially contaminated patient clothing and belongings that have been removed and bagged should remain in the decontamination area until properly decontaminated.

SUPPORT ZONE (COLD ZONE)

B-15. The support zone (or cold zone) is the outermost ring where no exposure or risk is expected. Victims who have been decontaminated or who do not require decontamination are transferred immediately to the support zone. The incident commander, medical personnel, and other support persons and equipment operate in this zone. Only standard precautions need be used when interacting with victims when they have been decontaminated or did not require decontamination.

Air Monitoring

B-16. Air monitoring will help ensure that the PPE used by personnel at the incident site (for example, in the exclusion zone) is sufficient or if the PPE needs to be upgraded or downgraded.

B-17. Decontamination personnel may want to confirm that they have successfully decontaminated the patient before they are released to the support zone. The effectiveness of decontaminating victims of liquid chemical contamination can be done with a combination of methods, such as air monitoring and swipe testing. For instance, with wipe sampling, cloth or paper patches may be wiped over a decontaminated surface or skin. Color changes may be noted that could indicate the possible presence of remaining residual liquid chemical contamination. The presence of beta and gamma radiological contamination can be readily confirmed by passing a radiation detector over the entire body. Air monitoring can detect chemical vapors emanating from any residual liquid contamination remaining on the victim.

Protection Against Biological Warfare Agents and Radioactive Material (After an Attack)

B-18. For protection against BW agents and radioactive material (after an attack), a minimum of Level C PPE is recommended. This equipment includes a full-face, air-purifying respirator (equipped with a P-100 or high-efficiency particulate air [HEPA] filter), rubber gloves, Tyvek or equivalent garments, and hood and boot covers. A powered air-purifying respirator (PAPR)—if available—is preferred for respiratory protection.

Note. For T-2 mycotoxins, use the PPE as described in Table B-2, pages B-4 and B-5.

Table B-2. Equipment level requirements

CWA	TIM	BWA	Radiological/Nuclear
HOT ZONE			
Level A (initially) with NIOSH-certified SCUBA. The PPE level may be lowered if air monitoring indicates this is safe to do.	Level A or B (initially) with a NIOSH-certified SCUBA (level depends upon the chemical or situation). The PPE level may be lowered if air monitoring indicates this is safe to do.	**Depending upon the situation:** Level A or Level B (with NIOSH-certified SCUBA). Level C (with NIOSH-certified PAPR, equipped with HEPA filters). Level C (with NIOSH-certified full-face APR, equipped with P-100 filter).	**Short-duration exposure:** Level C with a NIOSH-certified, full-face, nonpowered APR (equipped with the combination of a P-100 filter and organic vapor and acid gas cartridges/ canister) is acceptable. PAPR (equipped with the combination of a HEPA or P-100 filter and organic vapor and acid gas cartridges/ canister) is preferred. Gloves, Tyvek (or equivalent) garments, hood, and boot covers. **Extended-duration exposure (days, weeks, months):** Level B or Level C with a PAPR (equipped with HEPA or P-100 filter and organic vapor and acid gas cartridges/ canister), gloves, Tyvek (or equivalent) garments, hood, and boot covers.
Note. When responding to fires or entering buildings on fire, structural firefighting gear should be worn, including helmet, SCUBA, and turnout gear (thermally insulated coat, pants, and boots).			

Table B-2. Equipment level requirements (continued)

CWA	TIM	BWA	Radiological/Nuclear
WARM ZONE			
Same PPE level as hot zone (or one PPE level lower than that used in the hot zone if professional judgment or air monitoring indicates this is safe to do).	Same PPE level as hot zone (or one PPE level lower than that used in the hot zone if professional judgment or air monitoring indicates this is safe to do).	One PPE level lower than the hot zone.	Same PPE level as used during short-duration exposure in the hot zone.
COLD ZONE			
Standard Precaution PPE	Standard Precaution PPE	Standard Precaution PPE	Standard Precaution PPE

Protection Against CWAs and TIMs

B-19. Those in primary triage direct potentially contaminated patients to either the ambulatory (nonmedical) or nonambulatory (medical) decontamination stations. If necessary, life-saving procedures would be performed in the nonambulatory (medical) decontamination station. Those performing decontamination or assisting in the decontamination would have to wear PPE. Once the patients leave the decontamination stations, they are considered clean, and they proceed to secondary triage.

This page intentionally left blank.

Appendix C
Advanced CBRN Training

With the increasing threat that terrorist organizations may use WMD, multiple courses and organizations have been established to prepare first responders to deal with these incidents. ARSOF CBRN forces can enhance unit capabilities by having first-responder and other HAZMAT training.

CENTER FOR NATIONAL RESPONSE

C-1. The Center for National Response (CNR) is located in Gallagher, West Virginia and serves as an ideal location for ARSOF to conduct CBRN training. The location has over 10,000 acres of semi-wilderness area surrounding the tunnel that can be used for training purposes. It is uniquely suited as a multipurpose exercise facility that is designed to meet a wide range of WMD CM and CT requirements for the federal, state, and local organizations. The tunnel's physical configuration enhances experience at the individual, unit, and multiorganizational agency level. It serves as a valuable asset in preparing ARSOF to meet current and future threats and challenges. The tunnel is ideal for consequence and crisis-management emergency response exercises and provides a realistic environment where CRDs, CDDs, DRTs, and other SOF CBRN personnel can practice their techniques in mitigating the effects of a WMD incident.

C-2. The CNR has several scenario venues available. The sets are as follows: the postblast rubble area with hazards and vehicles; the subway train and station with mezzanine; three chemical, biological, or drug laboratories at different levels of sophistication; a highway WMD HAZMAT incident that can be configured with a wide variety of chemical, biological, and radiological sources with numerous vehicles; and a cave and a bunker complex that can be used in a multitude of scenarios. The CNR also has a confined-space emergency egress trainer. For more information about the CNR, visit http://www.centerfornationalresponse.com/index.html.

EDGEWOOD CHEMICAL BIOLOGICAL CENTER

C-3. The U.S. Army's Edgewood Chemical Biological Center (ECBC) is located at Aberdeen Proving Ground in Edgewood, Maryland. The ECBC provides a direct relationship between ECBC's chemical and biological defense experts and ARSOF CBRN personnel by way of advanced CBRN training program. This unique relationship allows the scientist and engineer to share their knowledge, experience, and expert talents directly from the lab and into the classroom. Each training event is a tailored program by the CBRN unit to fulfill the unit's specific mission requirements regarding a CBRN threat. Each training event lasts from 1 to 14 days and is designed by the SOF unit selecting from 43 different modules. The selected modules are then grouped together to create a training package and provide the ultimate training experience. The course of instruction covers, but is not limited to, a chemical and biological overview of agents, detection, protection, decontamination, sampling, mitigation, and treatment. A "lanes approach" can be taught to split a particular team into their own specialized components and train simultaneously on different subjects. ECBC encourages units to train at Aberdeen Proving Ground so the Soldier can use as many of ECBC's 1200 personnel and unique CB facilities as possible. However, mobile training teams can conduct courses anywhere in the world. For more information about ECBC, visit the ECBC website at http://www.ecbc.army.mil/ps/svcs_advanced_cbrn_training.htm.

DUGWAY PROVING GROUND

C-4. Dugway Proving Ground (DPG) is the primary CB defense testing center under the reliance program—a program that determines the reliability and survivability of all types of military equipment in a

CB environment. DPG is located in the Great Salt Lake Desert, approximately 85 miles southwest of Salt Lake City, Utah. DPG provides a remote location for SOF CBRN units to train realistic scenarios with role players. Each training event is a tailored program by the CBRN unit that may include the use of simulated CBW agents with unique disseminations to add realism to all training events. Interim and formal after action reports include exercise videos and immediate feedback by SMEs (Ph.D. Level). All results and feedback are confidential to protect the unit. In addition to CBRN training, DPG provides several training venues for SOF to integrate into their training. DPG has many ranges for SOF use, to include desert warfare and live-fire training, land navigation and off-road mobility, and CAS ranges. Additionally, unmanned aerial vehicles, nine drop zones, and a full-scale biological and chemical training and testing facility are available for use. For more information about DPG, visit https://www.dugway.army.mil/sites/local/. The school also offers the additional courses discussed below.

TECHNICAL ESCORT

C-5. The scope of the school is to perform technical escort duties involving field sampling, detection, identification, limited decontamination, and mitigation/remediation of hazards associated with CBRN materials. It is located in Redstone Arsenal, Alabama and lasts 3 weeks. More information can be found at http://redstone.army.mil.

ADVANCED CHEMICAL AND BIOLOGICAL INTEGRATED RESPONSE COURSE

C-6. This course is designed to provide students with hands-on incident-response opportunities in real and simulated chemical and biological environments. This course is 40 hours in length and offered in several locations by the federal government and some universities.

FIELD MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

C-7. This course is designed for Medical Service Corps officers and Chemical Corps officers and NCOs in medical or chemical specialties. Class instruction and laboratory and field exercises prepare graduates to become trainers in the first-echelon management of chemical and biological agent casualties. This course is 40 hours in length and taught at APG. More information on the course can be found at https://ccc.apgea.army.mil/courses/in_house/brochureFCBC.htm.

DEFENSE NUCLEAR WEAPONS SCHOOL (DNWS)

C-8. The DNWS continues in its evolution as the nation's education and training center for DOD nuclear-core competencies. It is located at Kirkland Air Force Base, New Mexico. The school is run by the DTRA and offers multiple courses, to include the following:

- Consequence Assessment Tool Set, Level 2.
- Geospatial Intelligence for Consequence Assessment.
- Hazard Prediction and Assessment Capability, Level 1.
- Hazard Prediction and Assessment Capability, Level 2.
- Joint Nuclear Explosive Ordnance Disposal Course.
- Joint DOD-DOE Nuclear Surety Executive Course.
- Joint Planners Course for Combating WMD.
- Nuclear Weapons Orientation Course.
- Proliferation, Terrorism, and Response Course.
- Radiological Accident Command, Control, and Coordination.
- Radiological Emergency Team Operations.
- Theater Nuclear Operations Course.
- WMD Command, Control, and Coordination.

Note. More information about DNWS can be found on the DTRA Web site at http://www.dtra.mil.

HAZARDOUS MATERIAL TRAINING

C-9. Many fire departments across the United States offer certification in HAZMAT courses. These include confined-space training, clandestine labs, emergency response to terrorism, and incident management. Although these classes are tailored toward first responders, they also provide excellent training for SOF CBRN personnel. Oftentimes, SOF are the first units onto an objective. HAZMAT training and certification allow SOF the ability to continue operations despite an AO that may contain or be contaminated with HAZMAT.

This page intentionally left blank.

Appendix D

CBRN Risk Assessment and Vulnerability Analysis Tool

RISK ASSESSMENT

D-1. A risk assessment allows the commander and his staff to identify vulnerabilities to a CBRN hazard and mitigate those risks. The assessment is a series of questions that provide insight into mission areas that may be susceptible to a CBRN attack. Conversely, shortcomings, and the need for improvement, may be identified in critical warfighting capabilities. The areas of interest generally relate to a defensive CBRN posture within the purview of the primary staff and special staff. It should be noted that the result of any staff evaluation dealing with readiness requires a determination of security classification.

RISK ANALYSIS CONSIDERATIONS

D-2. **Identify and Disseminate Threat.** The staff should answer the questions listed in Figure D-1, pages D-1 and D-2.

- What is the threat?
  - Are adversaries thought to have a CBRN threat?
  - By adversary, what CBRN agents are known to be on-hand?
  - By adversary, what CBRN agents are thought to be available?
  - By adversary, what and how many CBRN delivery systems (for example, SOF, missile, aircraft, ship, and artillery) are available and where are they located?
  - By adversary, are CBRN preventative measures, such as inoculation and defensive training, being conducted and, if so, how extensive are the measures (for example, inoculations of all military or just SOF; for one biological agent or several) and how much vaccine do they have available? Is there a release other than attack threat?
  - Has “collateral damage” been considered a threat posed by industrial compounds?
  - Will coalition forces be subjected to environmental hazards that have aspects similar to deliberate chemical agent attacks and, if so, what?
  - What specific environmental hazards have been identified that might affect coalition proposed routes of advance or withdrawal?
  - Where are CBRN production facilities and stockpiles?
  - By adversary, which individuals have CBRN release authority and at what times (for example, at all times or when delegated to field commanders’ discretion during crisis)?
  - By adversary, what is their CBRN doctrine and strategy—including declaratory policy.
- How will the CBRN threat be used?
  - When do we anticipate attack in terms of deployment?
  - What is the most likely type of strike that might occur early in the deployment process?
  - What is the anticipated priority of attack against ports, airfields, and similar locations?
  - Is the enemy conducting noticeable reconnaissance of ports, airfields, and so on?
  - What are the enemy agents of choice for specific scenarios?
  - What is the stated national resolve and capability of the enemy regarding CBRN employment in the region, as well as in CONUS to prevent or disrupt deployment?
  - Will adversarial use of CBRN weapons increase their regional “prestige” or alter the psychological balance?

Figure D-1.Threat analysis considerations

- What is the enemy's anticipated concepts of operation with regard to employment of CBRN weapons against an adversary either armed with WMD or allied with an adversary that is armed with WMD and capable of holding at-risk strategic centers of gravity? For example, is the enemy expected to threaten use of CBRN weapons to deter intervention operations against strategic centers of gravity? Is the enemy expected to use CBRN weapons if deterrence fails—to preempt, retaliate, or withhold for use as a last resort, or use in combination with any of the preceding concepts?
- Will adversaries be able to threaten U.S. forces throughout the depth of their deployment?
- In priority order, what kind of information is the adversary seeking about its opponent that may be useful in planning CBRN operations?
- Have friendly or neutral population centers been identified as potential targets?

- What friendly CBRN storage facilities are potential targets?
  - What effect will threat employment have on operations?
  - Which pre-positioned storage areas are critical to the allied effort?
  - What is the vulnerability of storage areas for pre-positioned assets?
  - What is the enemy's resolve and threat toward noncombatant U.S. citizens in theater?
  - What level of deployment degradation will the enemy seek to achieve using CBRN weapons?
  - What are the impacts of threat CBRN usage with respect to psychological, medical, or logistical implications?
  - Will the use of WMD impact the cohesiveness of coalitions? If so, how?
  - Which ports and airfields will be prime targets for enemy use of CBRN agents under current operational plans?
  - Will CBRN weapon use produce a strategic, political, or psychological effect that overshadows its actual military utility?
- Have appropriate intelligence activities been tasked to develop the CBRN threat?
  - Which agencies are developing the CBRN threat?
  - What resources does the combatant command have for obtaining CBRN threat data when deployed?
  - What is the timeliness of CBRN threat data?
  - How are the above resources informed of specific information to be watching for?
  - What system is in place to prioritize intelligence requests?
  - Do the various intelligence reports identify and deconflict contradictory information?
  - How is contradictory information deconflicted?
  - Which staff sections or personnel contribute to deconflicting of CBRN intelligence?
  - What criteria are in place to determine if pieces of information should be incorporated into planning?
- Has the necessary information been given to the whole team (Services, planners, and units)?
  - When is data considered ready to be sent out to other team members?
  - How is CBRN threat data routed?
  - How and when are information and conclusions shared with actual or potential allies (coalition partners)?
  - What is the threat to HN population or forces? How might this impact coalition operations?
  - What HN emergency response and reporting agencies are included in the dissemination of CBRN data? When? What types of data?
  - Can the unit monitor for changes to the threat and rapidly disseminate major changes?

Figure D-1.Threat analysis considerations (continued)

D-3. **Incorporate CBRN Threat Into Plans and Operations.** The staff should answer the questions listed in Figure D-2, pages D-3 through D-6.

- Do OPLANS accurately identify the current CBRN threat?
  - What is the U.S. doctrinal operational response to a confirmed chemical or biological use on U.S. forces?
  - What other operational responses are authorized to be made by the GCC?
  - When is the GCC authorized to make these operational responses?
  - How do friendly targeting plans consider the environmental aspects of industry and potential enemy weapons storage areas?
  - What are the plans and priorities for distribution of FP assets to U.S. or HN combatants or noncombatants, and EPWs? (1) Decontamination units and material? (2) CBRN reconnaissance, detection, and warning units and equipment? (3) Chemical or biological defense equipment and support (for example, individual and collective protection, and medical prophylaxes)? (4) Smoke and obscurants (such as units and munitions)?
  - What plans are in place, tested, and evaluated regarding handling and evacuation of contaminated corpses?
  - What passive avoidance measures are required by the CCDR?
  - In consideration of joint doctrine, how are HNS needs determined?
  - How do the plans provide CBRN protection guidance for the entire spectrum of operations, from stability operations to general war?
- Are planners addressing the CBRN threat, in peacetime, to forward-deployed forces?
  - How are changes in threat status in the unit's AO sent quickly with a proper priority?
  - What priority is used to ensure timely receipt of information?
  - Are chemical and biological defense requirements being fulfilled?
  - Are forward-deployed forces inoculated with safe and effective vaccines for high-threat BW agents?
  - How sufficient are the medical (for example, vaccines, antibiotics, or antidotes) and nonmedical (for example, protective equipment) stocks on hand?
  - Are units trained to operate in a chemical and BW environment?
- Is there a structured plan to reduce or mitigate the CBRN threat?
  - Do planners understand which "smart" sensors, are available and how to use this information?
  - Once smart sensors detect agents, how (using what communication system) is their information transmitted, especially across Service and coalition lines?
  - What is the standard to confirm enemy use of CBRN weapons? For example, is a Gold Seal biological laboratory required for BW confirmation?
  - Which staging areas are most critical to success?
  - What alternate staging areas have been identified?
  - What priority are enemy CBRN weapons delivery and storage units being given in the targeting sequence?
  - What military/nonmilitary steps are planned to negate or deter the use of CBRN weapons?
  - What friendly actions may create a CBRN hazard for SOF?
  - What steps are planned to eliminate enemy capability to target ports, airfields, and so on?
  - What measures, related to countering CBRN weapons, are being used throughout the coalition depth of deployment and beyond?
  - Are leaders prepared to portray enemy use of CBRN weapons in such a negative way as to rally world opinion against the enemy?
  - What CBRN defense units will be deployed early to provide protection against the enemy's use of CBRN weapons at points of entry?
  - Which, if any, warning systems have digitization connectivity?
  - What risk analysis methods are in place to determine if or when to decontaminate?
  - How does the command know what units are trained and equipped to perform decontamination in the absence of chemical units?
  - What can the command do about it if units are not trained?

Figure D-2. CBRN plans and operations considerations

  - What steps have been taken to ascertain the CBRN defense readiness of potential coalition partners?
  - What means are available to alleviate shortcomings in coalition partners' CBRN defense posture or capability?
  - If deployment is planned to be continuous over a relatively long period of time, what protective measures are planned for later deploying units?
  - How frequently are field artillery and air defense artillery units required to move?
  - What is the theater guidance with regard to dispersion?
  - What steps have been taken to mitigate the effect of CBRN weapons employment on tempo?
  - What awareness training have component forces received to negate the threat of covert positioned CBRN weapons?
- Is the entire staff involved in the CBRN defense process?
- What are the medical considerations?
  - What medical protection assets are in place in the form of vaccines, pretreatment, or skin protectants?
  - What plans are in effect for using them?
  - What is the immunization protocol?
  - Providing medical assistance for enemy use presents significant implications. What plans have been made to address this?
  - What levels of medical protection have been provided to the subordinate units to increase an individual's resistance to a CBRN attack, indigenous medical threat, and environmental hazards? Do they understand how to use this protection?
  - What provisions for providing military-supplied medical assistance to nonmilitary personnel are included in campaign plans?
  - What plans are in place to alleviate shortfalls caused by providing medical support to nonmilitary personnel?
  - What steps have been taken to ensure proper medical assistance is available for combat units, U.S. and HN civilian workers, dependents, and EPWs?
  - Are all hospitals (component, HN, and coalition) equipped to care for CBRN casualties?
  - What vaccines are available within the theater?
  - If sufficient vaccines are not available to inoculate all personnel, what is the protocol for determining who receives vaccinations?
  - What is the policy for decontaminating and evacuating the wounded?
  - What steps have been taken to ensure that the decontamination and evacuation policy is known and understood?
  - What steps have been taken to ensure that an adequate number of medical personnel have received specialized training in CBRN casualty treatment and management?
  - Have plans been made for combating the indigenous medical threat within the theater?
  - What medical force structure, by sequence, is available to the theater?
  - What is the policy for determining the priority of medical attention to U.S. civilians, allies, EPWs, and HN personnel?
- What are the logistics issues?
  - What CBRN defensive procedures have logistical commanders initiated to limit exposure of their units and facilities to CBRN attacks and to protect personnel and supplies from CBRN contamination?
  - What C2 procedures are established to ensure the effective CBRN defense of multi-Service, HN, coalition, and major logistics bases, including ports and airfields?
  - What plans are in effect for ensuring that sufficient protective equipment is available for issue to U.S. civilians, HN personnel, and allies?
  - How much equipment for protecting EPWs has been ordered? What is a reasonable amount to plan for? Where is it stored?
  - How do you determine if the required amount of individual protective gear and unit CBRN defense equipment is on hand in each subordinate unit?

Figure D-2. CBRN plans and operations considerations (continued)

  - What procedures are in place to ensure that sufficient water and other supplies are on-hand in the proper location to permit effective and efficient decontamination operations?
  - What plans have been made to ensure that necessary medical supplies are kept at the level required to execute the mission?
  - What steps have been taken to ensure that sufficient alternate supply routes exist for logistical operations?
  - What plans are in place to address CBRN defense equipment resupply?
  - What training has been conducted with HN police, fire, and other emergency organizations regarding CBRN defense?
- What factors affect CMO?
  - What action plans are in place to depict a CBRN defensively trained force?
  - What provisions have been made to protect or replace the noncombatant workforce if evacuation is ordered?
  - What cross training of military to perform civilian technician work has been conducted?
  - What evacuation routes for noncombatants have been designated?
  - How has this information been communicated to those affected?
  - How has it been practiced, if at all?
  - What plans have been made for controlling civilian evacuations?
  - How has this been practiced?
  - How has information concerning potential environmental hazards been communicated to the noncombatant population?
  - What steps have been taken to protect the nonmilitary personnel from environmental hazards?
  - When was the last NEO exercise?
  - What was the percentage of participation?
  - How do leaders ensure personnel with wartime missions are not simultaneously slotted for NEO?
  - What steps have been taken to ensure that the guards have been trained in how to teach EPWs the proper use of protective equipment?
  - What units have been designated to protect civilians, medical facilities, and so on? What steps have been taken to ensure these units are not called for elsewhere in OPLANs?
  - What are the CBRN defense-related duties and responsibilities of the various CA units deployed in support of the OPLAN?
  - Who is responsible for coordinating CBRN defense matters with the other U.S. and HN government agencies in the theater? Is he prepared to do so?
- What is included in the PAO plans?
  - What PAO plans are in place to deter CBRN weapon use?
  - What PAO plans are in place to rally world opinion before and after CBRN weapon use?
  - What PAO plans are in place to deter further CBRN weapon use?
- Are there legal issues to consider?
  - What are CBRN weapon ROE?
  - What are the ROE for employing RCAs?
  - What is the U.S. policy for use of CBRN weapons?
- Do leaders provide enough guidance to synchronize the component CBRN defense plans?
  - What decision support tools are available to assist the unit commander in determining proper protective posture?
  - What decision support tools are available to assist the unit commander in determining proper protective posture?
  - What decision support tools are available to assist the unit commander in determining when to decontaminate?

Figure D-2. CBRN plans and operations considerations (continued)

- Is the CBRN threat adequately considered in the OPLAN?
  - What alternate ports and airfields are available?
  - What protective and defensive measures are in effect at ports and airfields?
  - What is the policy on sending out CBRN warning reports (for example, affected units only or all units)? If all units, how do leaders differentiate between affected/nonaffected units?
  - How do leaders transmit this information across Service and coalition lines?
  - What is the time-phased arrival of medical units in-theater?
  - What flexibility for changing arrival sequence exists? If CBRN defense assets are needed more quickly, what is the mechanism for making this happen?
  - What provisions are in place to ensure adequate CBRN FP units are sequenced for early entry operations?
  - What is the deployment sequence for all components, as applicable to CBRN reconnaissance units? Biological detection (BIDS and Gold Seal Lab) units? CBRN decontamination units? Medical units and personnel? Smoke generation units?
  - What CBRN defense measures are integrated into the overall FP plan?
  - What measures are taken to protect deep-strike capabilities?
  - What methods of CBRN warning and reporting have been established to ensure dissemination of information to subordinate components and coalition forces?
  - What is the current method of determining the need for decontamination?
  - What priorities of decontamination have been established in-theater?
  - What provisions have been made to ensure knowledge of all joint force unit locations?
  - What steps are being taken to ensure that subordinate commanders know where contaminated areas are during operations?
  - What priority is placed on avoiding contamination?
  - What is the plan for deploying CBRN sensor sites in the theater of operations?
- Do supporting component OPLANs adequately address CBRN defense?
  - How are supporting component assets organized to perform dedicated CBRN defense functions?
  - How do supporting component commanders determine CBRN readiness?
  - What is the status of supporting component commander's plans? Equipment? Training? Personnel? What CBRN functions have the other components planned for conducting internally?
  - For which CBRN functions will a combined joint task force (CJTF) need to provide support to the other components?
  - What methods are in place to monitor CBRN defense readiness of component forces in the areas of training, equipment, and personnel?
  - How are component CBRN defense assets coordinated into a comprehensive theater CBRN defense plan?
- Do the plans maximize joint service synergy, effectively use resources, and produce a seamless CBRN defense posture across the operation?
  - How has CBRN warning and reporting been integrated into the joint force command and control support systems?
  - When was this CBRN defense measure last practiced?
  - How have the Services' requests for CBRN defense forces been incorporated into OPLANs?
  - Where are the reconnaissance assets located?
  - Where do plans call for CBRN reconnaissance units to be located during offensive and defensive operations?
- Have CBRN defense shortfalls been addressed?
  - What actions are taken to alleviate shortfalls in the CBRN defense readiness of supporting Service commanders' units?

Figure D-2. CBRN plans and operations considerations (continued)

D-4. **Ensure Adequacy of Guidance and Doctrine.** The staff should answer the questions listed in Figure D-3, page D-7.

- What enemy CBRN or WMD employment concepts are being considered in plans?
- What JTF guidance is in place to synchronize component CBRN defense plans?
- What are the procedures for decontaminating the wounded and quarantining contagious casualties? What are the shortcomings?
- What procedures have been written regarding handling and evacuation of contaminated corpses? How has the CJTF ensured that components are aware of this policy? How and when has knowledge of this policy been evaluated? What steps have been taken to ensure that this policy is known and understood?
- What is the stated national policy of massive response to enemy use of CBRN?
- What plan exists to obscure high-priority or high-signature targets with smoke and obscurants from enemy acquisition assets (including smoke deception plan)?
- What is the policy of coalition partners on response to enemy use of CBRN?
- Does the policy of coalition partners include acting independently if CBRN is used on their troops or homeland?
- Has the issue of a coordinated response concerning coalition partners been coordinated in advance?

Figure D-3. CBRN guidance and doctrine considerations

D-5. **Assess Readiness and Identify Needs**. The staff should answer the questions listed in Figure D-4.

- Have combatant command issues identified in war games and exercises (for example, how to handle civilian or coalition requirements, logistics shortfalls gaps in C2, or CBRN warning and reporting in developing theaters) been identified for resolution? What process is being used for resolution?
- What is the process to ensure plans have been updated to reflect exercise lessons learned?
- What mechanisms do the CCDR and staff use to determine unit CBRN defense readiness?
- How is CBRN defense readiness incorporated into unit readiness reporting? Are ratings based on objective criteria or subjective criteria? Can the commander call his status anything he wants regardless of what the data indicates?
- How has the staff ensured that the process for resolving CBRN defense readiness issues is known to all subordinate commands?
- What are the CBRN defense standards that the CCDR expects all deploying units to meet? What steps are being taken to ensure that these standards are being met?
- What are the CCDR's criteria for determining CBRN defense readiness?
- How do the CCDR and staff consider and encourage technological developments related to CBRN defense individual protection?
- To what degree has the CCDR elevated the requirement for uniform and meaningful CBRN readiness standards and reporting to OJCS?
- What are the measurement standards that the CCDR and staff use to ensure uniform and meaningful standards and assessment of CBRN defense readiness among the assigned forces?
- What CCDR CBRN guidance has been published?
- What is the system to ensure issues that cannot be resolved at Service, component, or combatant command staff levels have been identified to appropriate organizations for resolution?
- What mechanisms exist for providing theater CBRN defense readiness needs to Service chiefs for their information or action?
- What is the process to ensure that CBRN defense needs have been incorporated into the CCDR's integrated priority list (IPL) process?

Figure D-4. CBRN readiness considerations

VULNERABILITY ANALYSIS TOOL

D-6. The vulnerability analysis (VA) is the commander's tool to conduct continuous, systematic estimating of consequences to friendly forces resulting from CBRN attacks. The overall methodology includes IPOE, risk assessment, and VA with associated mitigation measures. The VA is a stand-alone document usually developed by a small group of SMEs from the staff.

RISK ASSESSMENT CHARTS

D-7. The charts in this appendix describe the risk assessment process. They aid the commander and staff in determining force risk levels and the minimum recommended steps to reduce the CBRN risk. The planning staff should follow these basic steps when using the risk assessment charts:

- *Step 1.* Enter the chart at "Start Here."
- *Step 2.* Answer the main question in the shaded box by considering subordinate questions and answers underneath it.
- *Step 3.* If the answer to any question below the shaded box is a "yes," then the shaded box answer is "yes."
- *Step 4.* Go to the next lower box and repeat the process.
- *Step 5.* If the answer to a shaded box question is "no," read the risk assessment to the right.
- *Step 6.* Read to the right to determine the minimum recommended procedures to reduce risk.
- *Step 7.* Complete the assessment by assigning the assessed risk level in the risk assessment box at the bottom of the page.

Note. Sound judgment by commanders and staffs determine this subjective "Risk" rating. Charts should be modified with additional questions and mitigation measures based on mission-specific situations.

CHEMICAL VULNERABILITY

D-8. Before conducting a vulnerability analysis, commanders should first determine the risk of a chemical attack or the threat's capability and probability of use. If the possibility exists for the threat to use chemical agents, the commander conducts a vulnerability analysis in two parts.

ESTIMATE DELIVERY CAPABILITY

D-9. First, the commander makes an estimate of the threat's capability to use chemical munitions in the unit's AO or area of interest (Figure D-5, page D-9) within a specific time period. Second, he uses this information to generate simplified effects information. The following steps outline the estimate process.

Step 1. Determine Time Periods of Interest

D-10. Time periods of interest are based on the commander's operational concept and situation variables, such as METT-TC. The time period is coordinated with the intelligence and operations officers. They will normally conform to phases or the expected duration of an operation; however, it may be desirable to use other criteria. For example, a maintenance unit may want to use the expected time lag between an anticipated threat chemical attack and the time required to retrieve and don their protective gear (as in MOPP READY) as the time period of interest. A time period may also be based on factors relating to enemy tactics, such as the expected arrival time of a second echelon force. Further, significant weather changes could also influence the selection of time periods. The time period of interest can range from 6 hours to 48 hours. Although some planning factors are based on a 12-hour to 48-hour cycle, fixed-site operations may be based on a significantly longer time frame, such as 12 hours to 96 hours, with time periods of 24 hours or greater used when IPOE allows. Time periods of less than 6 hours are generally not used. For short-term actions, shorter time periods could be used to estimate the effects of initial enemy preparation fires or to estimate the effect of a single chemical agent attack.

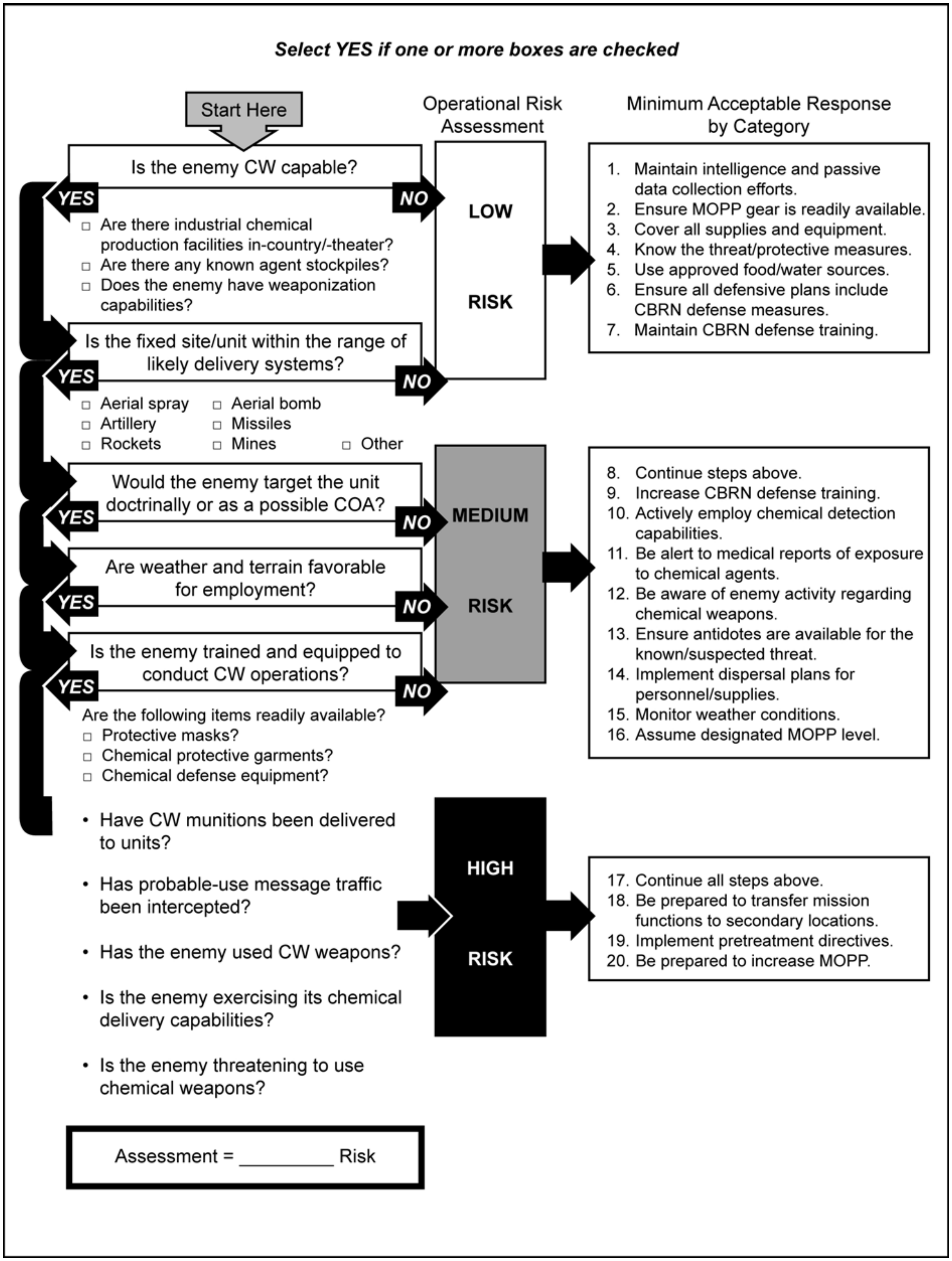

Figure D-5. Chemical risk assessment

Step 2. Associate Weather Data With Each Time Period

D-11. Operations officers should associate each time period with a temperature (ambient or ground), wind speed, and stability category. (The M93 Nuclear, Biological, and Chemical Reconnaissance System can also report ground temperature.) The temperature will impact primarily on agent persistency. For each time period, temperature should be expressed as one of the following (in degrees Celsius): 55, 50, 40, 30, 20, 10, 0, –10, –20, or –30 degrees. The operations officer determines temperature by taking the average of the temperatures from each chemical downwind message (CDM) line applicable to the time period of interest. He uses this average temperature for all calculations. When estimating persistency for agents expected to last beyond the time period of interest, he uses the average daily temperature of the day in which the attack may occur. Wind speed will impact on casualty production, persistency, and downwind agent travel. It should be expressed as one of the following: 3, 6, 9, 12, 15, or 18 kilometers per hour (kmph). As a rule of thumb, the officer should use 18 kmph for any wind speed above 18 kmph. He should calculate wind speed in the same manner used above for temperature. In some situations, it may be necessary to modify this number for casualty estimate purposes. For example, if a 24-hour period contains 6 hours of expected high wind speeds (unstable conditions), a calculator would probably elect to disregard those figures and develop a separate (lower) average for casualty estimation. The staff estimates an enemy would not use chemicals for casualty effects during that 6-hour period of high winds. The operations officer will base this decision on the magnitude and duration of the wind change and the expected enemy COA. Stability categories (stable, neutral, or unstable) also affect casualty production and downwind agent travel. Stability has a major impact on casualty production downwind, since it affects the vertical dispersion of the agent. During inversion (stable atmosphere), the agent is trapped in a shallow layer near the ground and the concentration remains high. When the atmosphere stability category is either neutral or unstable, the agent's concentration near the ground is lower. Inversions occur at night with clear skies and light winds. The officer determines the stability category in the same way as temperature and wind speed. Other environmental factors exist that could impact the analysis. Terrain and vegetation could affect the estimate. These factors can affect the dispersion of the agent, its concentration downwind, and the estimated casualties. However, these factors have been incorporated in the persistency estimate process.

Step 3. Estimate Delivery Capability

D-12. The operations officer estimates the number of chemical munitions likely to be used in the AO for each required time period. He provides the intelligence officer with the time periods of interest. He then requests information concerning the threat capability to deliver chemical munitions in the AO.

D-13. The estimate should indicate the number of delivery units, by type, and the number of rounds, by agent, if available. The intelligence officer also provides estimates on when, where, and what type of agent the enemy might use in the AO. If the situation or event template does not yield needed information, the operations officer can assume the enemy can optimize the agent mix. For example, to determine the threat's capability to create a contamination obstacle, he can assume the threat will fire only persistent agents. Likewise, to predict casualty effects, he can assume the enemy will fire agents that have the greatest casualty-producing effects.

D-14. When the primary threat is covert or unconventional, the enemy delivery capability should be expressed in terms of agent weight or as agent weight times some expected delivery means. For example, 10 kilograms of nerve agent delivered by an agricultural sprayer. If estimates indicate limited agent supply, it will be difficult to estimate how much of that supply will be used each day. As an option for this situation, the analysis can be conducted for a single enemy attack based on the threat's maximum employment capability during the selected time period.

D-15. The intelligence officer considers a number of factors in making his estimate, such as the number of employment assets within range of the AO and other AOs the enemy force must service. Factors that are considered are as follows:

- Enemy locations of chemical munitions.
- Weather effects on probable agents.

- Threat capability to deliver chemical munitions to delivery systems.
- Impact of threat attacks on civilians.

Note. The intelligence officer should not assume that every delivery system within range will be firing into the AO being considered.

D-16. The intelligence estimate should provide a range of numbers based on estimated COA for each time period. The estimate should provide the enemy's maximum capability and his likely delivery capability. Alternatively, different estimates can support various enemy COAs. Estimates should not be based on a friendly COA unless they would significantly impact on the enemy delivery capability.

D-17. It is not necessary to assess every possible situation and enemy option. To do so would result in inefficient use of available time. The goal is to provide estimates to the commander and staff, which can be later refined. The operations and intelligence officers should continuously assess the situation and look for events and options with the potential of changing the outcome of the battle.

GENERATE EFFECTS INFORMATION

D-18. Effects information will help the commander produce a casualty-effects estimate. Commanders should follow the steps below:

- *Step 1*. Determine probable friendly targeted size. Based on the chemical staff and S-2/G-2 IPOE, select an area or activity the enemy would probably target and then determine the target size. For example, determine the area occupied by a fixed-site activity; in this case, 400 m x 600 m. Calculate the number of hectares (ha) in the selected target area. One hectare is 10,000 square meters; therefore, an area that is 400 m x 600 m = 240,000 square meters or 24 ha.
- *Step 2*. Determine probable agent. Unless it is known which agents the threat will use, assume the most effective casualty-producing agent available.
- *Step 3*. Estimate casualties based on IPOE. Determine the number of rounds the threat may use to engage the specific target. Obtain the predicted temperatures (from CDM or other sources).

Note. For additional information, refer to FM 3-11.3; FM 3-11.14, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Vulnerability Assessment*; and AFMAN 32-4017, *Civil Engineer Readiness Technician Manual for NBC Defense*.

BIOLOGICAL VULNERABILITY

D-19. Before conducting vulnerability analysis, the staff determines the risk of a biological agent attack or the enemy's capability and probability of use and presence of endemic diseases. Once it is determined that the enemy has the capability and the willingness to use biological weapons, the staff then determines the unit's vulnerability to an attack (Figure D-6, page D-12). Even if an enemy lacks the capability to use biological weapons, the unit is still vulnerable to endemic diseases. Possible sources include contaminated water sources and local food. Commanders need to ensure units practice good hygiene. Personnel should wash their hands frequently, particularly before eating, to prevent ingestion of harmful biological material (either indigenous or BW agents found on various surfaces). To determine vulnerability to biological agents, the staff must—

- Determine immunization levels in relationship to threat or theater endemic agents and availability of prophylaxis.
- Determine the unit's protective posture. Is the unit protected by forward-deployed, prompt-response, all-weather, precision-strike conventional or nuclear capabilities to deter the adversary; and if deterrence fails, to preempt or respond to the adversary's use of CBRN weapons? Furthermore, is the unit protected by active defenses or FP against CBRN weapons before detonation or release of agents?

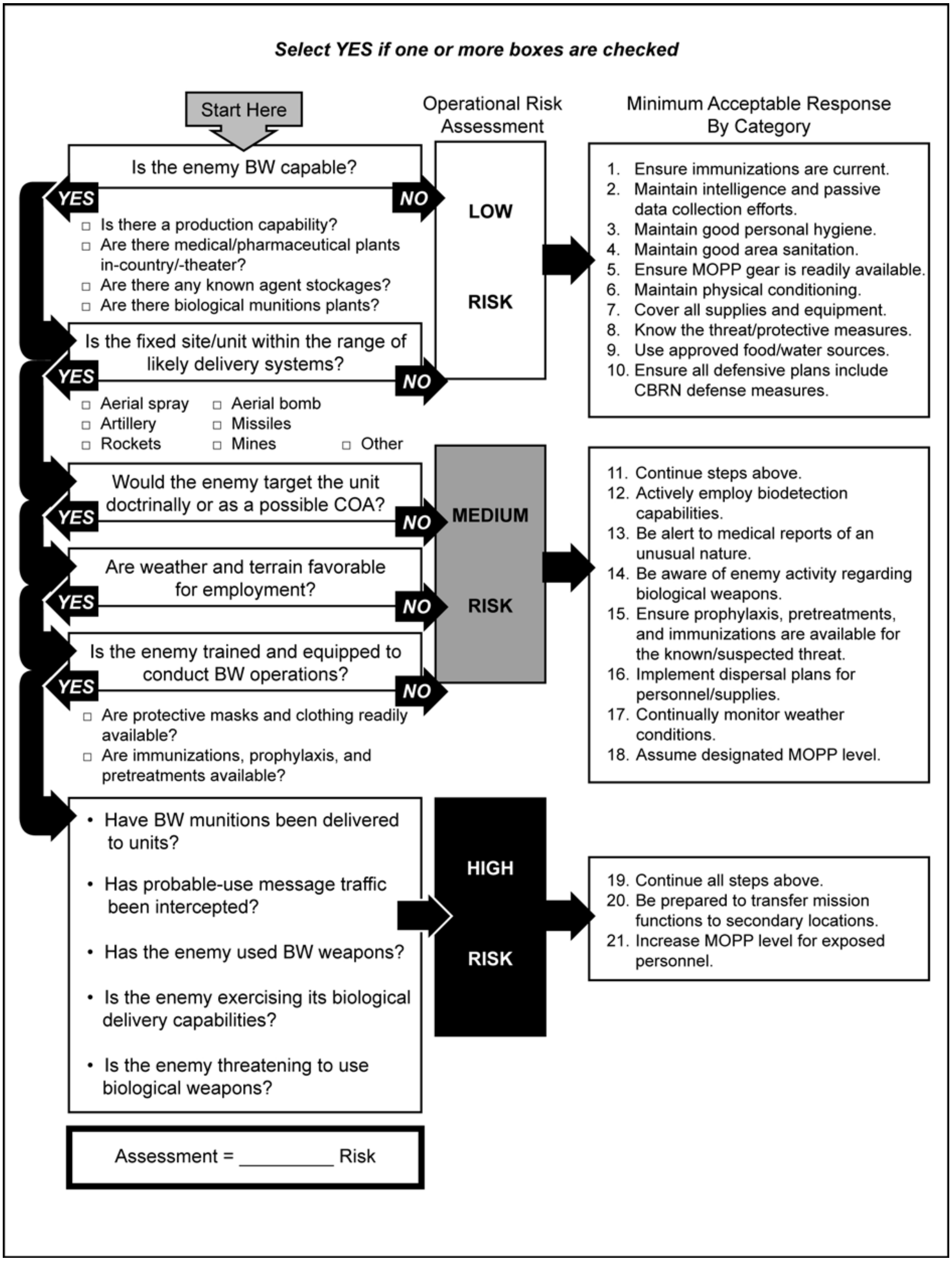

Figure D-6. Biological risk assessment

- Determine the unit's biological detection posture; does it have early warning systems? Does it have a BIDS, portal shield, interim biological agent detection system (IBADS), LR–BSDS, or JBPDS? Point detectors such as the BIDS or IBADS will determine if a biological attack has occurred, provide information on the BW agent, and provide a sample for confirmation purposes. A biological detector generally consists of a trigger, collector, detector, and identifier. The trigger will monitor the background, determine if significant changes occur in the background, and initiate the collection and detection or identification process. It is important to note that due to the state of technology and the nature of the background, triggers may react to the background changes that are not due to a BW attack. This reaction is normal. Generally, protection actions should not be taken upon trigger events alone. The detector, if present, will determine if the aerosol is biological or nonbiological (for example, smoke or dust). The identifier specifically identifies the BW agent allowing the commander to initiate FP and contamination avoidance measures. Other point detectors, such as portal shield, provide point detection and alarm of a BW attack through the use of multiple networked sensors. Unlike other biological detection systems, it uses networking and smart logic to reduce false alarms due to man-made events and certain natural aerosols. Generally, the system triggers when a predetermined threshold concentration is reached. This activity is communicated to the command post. Agent identification occurs within 15 minutes and alarms are transmitted to command post. A sample for confirmatory analysis is also automatically stored in the system and can be delivered to a supporting medical unit for analysis.
- Determine unit's hygienic practices. For example, are troops able to bathe or cleanse regularly?
- Determine current or projected maneuver (or mobility) disposition.
- Consider time of day and weather conditions. The time most conducive for BW attack is during a clear night or during early morning hours with light winds (less than 10 knots or 12 mph).

NUCLEAR VULNERABILITY

D-20. To assess a unit's vulnerability to a nuclear attack, a commander determines the likelihood of an adversary using a nuclear weapon; the unit's CBRN defense protection level; and the type and size of the weapon likely to be used by the enemy (Figure D-7, page D-14). The commander then weighs various COAs to determine which one allows for mission accomplishment at an acceptable risk. When addressing unit vulnerability to nuclear weapons employment, the commander should consider friendly force dispositions and capabilities.

D-21. A nuclear explosion's biological effects are measured according to the amount of radiation (centigrays) to which personnel are exposed. Two techniques to evaluate unit vulnerability to nuclear detonations are—

- A technical approach in which unit dispositions are compared with the effects of an expected yield.
- An operational approach in which unit dispositions are compared with targeting criteria used by the threat target analyst.

D-22. In a nuclear environment, the more concentrated a unit is, the more lucrative a target it becomes. If the unit itself is not the target, but falls within the fallout pattern, unit monitors will be capable of providing the commander with essential information regarding the hazard.

D-23. The primary tool for analyzing friendly dispositions is the radius of vulnerability (RV). RV is the radius of a circle within which friendly troops will be exposed to a risk equal to, or greater than, the emergency risk criterion (5-percent combat ineffectiveness) or within which material will be subjected to a 5-percent probability of the specified degree of damage.

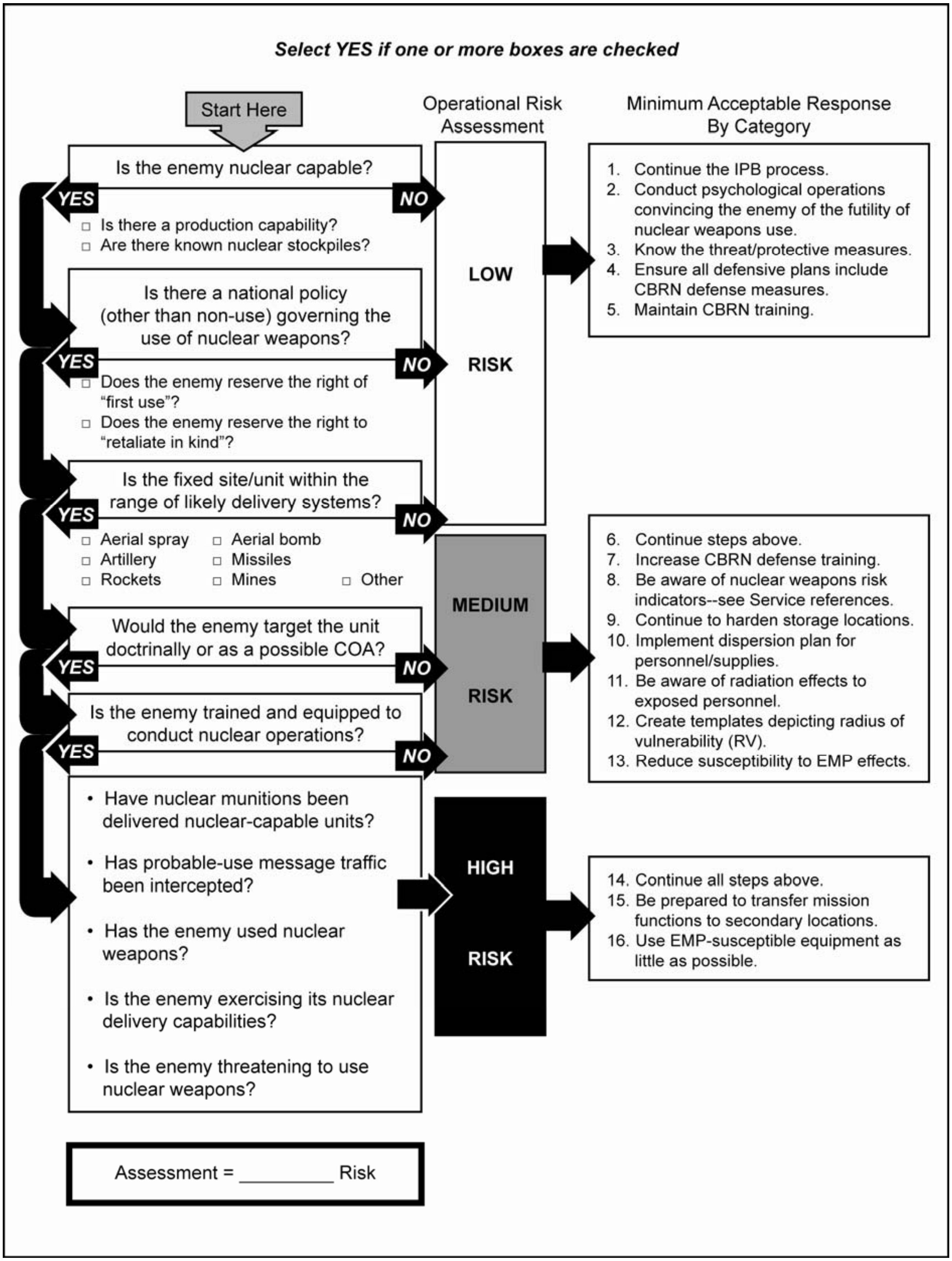

Figure D-7. Nuclear risk assessment

Appendix E

CBRN Sampling Techniques and Procedures

GENERAL

E-1. The collection of environmental and background (control) samples are an integral part of the investigation of allegations of CBRN use. As a routine technique, field personnel collect a minimum of four samples: three of suspected contamination and one in an unaffected area for control. Samples must be kept cool, or cold if possible. The types of samples taken and the collection methods depend upon the circumstances encountered by the collector (Figure E-1). Field collectors and analysis centers define techniques and collection requirements. The protection and sampling equipment used by a SOF element is tailored to fit specific situational requirements. Collection techniques vary according to the circumstances under which an element must work (for example, dead animals may be a sample source and should be triple bagged). A neat sample is an ideal sample medium for collection and laboratory analysis. Additionally, the return and recovery of any sample identification or test equipment previously used to identify the agents (M256 kits, M8/M9 paper) are of great value to a laboratory conducting analysis. These items should be recovered, packaged, and shipped for analysis. Different information may be derived from each type of sample.

- Use glass or polypropylene bottles.
- Use gloves made of nitrile; avoid Latex gloves.
- If local containers must be used, include two identical unused containers along with the sample.
- Do not use paper bags, as this sample will be of no value.
- Generally, try to sample from point sources. Sample as close to the discharge (point) source as possible.
- Always collect samples from control and target sites. Provide at least one control sample.
- Try and collect multiple control samples at one or more nearby control sites; make sure control samples are the same type as the target sample.
- Use duplicate samples to confirm chemical presence at a sampling spot.
- Select a sampling spot that has the highest probability of finding target compounds. Only one opportunity may exist to take a sample. Use maps, imagery, geological info, and weather data.
- Collect target samples first; find areas to collect control samples.
- Sample during the coolest part of the day in summer and the warmest part of the day in winter.
- Use the wind speed and direction to determine the surface contamination location.
- Watch out for high winds in arid areas because they will dilute target compounds to undetectable levels.

Figure E-1. Sampling guidance issues

CHEMICAL AND BIOLOGICAL SAMPLING (ENVIRONMENT)

E-2. Environmental samples include air, water, soil, and vegetation samples of suspected contamination. Background or control samples may be air, water, soil, or vegetation. In addition, control samples help determine the normal condition of the air, water, soil, and vegetation around the suspected contaminated area. The collection of environmental samples requires the collection of control samples. Control samples allow the analysis center to compare an uncontaminated sample with a contaminated sample and to determine whether a compound is naturally occurring in the environment. Collectors take samples of soil, water, and vegetation from areas that are approximately 500 meters upwind of an alleged attack area to ensure that an accurate comparison can be made. Control samples must be generically the same as those collected in an alleged attack area. For example, if a SOF element collects leaves from an apple tree in an attack area, it should collect sample leaves from an apple tree outside the contaminated area. If the team collects water from a pond in the attack area, it should collect samples of water from a pond (not a moving stream) in a nearby clean area. The size of an environmental control sample should be about the same as those taken from an attack area. Each type of sample is explained below.

Air or Vapor Samples

E-3. Air or vapor is a good sample matrix since it is well mixed. Air or vapor from a sample site contains a static concentration of contaminants. The concentration of contaminants depends upon the flow rate of the contaminant into the environment, the wind speed, the physical state of the contaminant, the terrain contours, and temperature as a variable.

E-4. **When:** Collectors should perform sampling as soon as possible after the alleged use of an agent.

E-5. **Where:** When a facility emits chemicals into the atmosphere, the best places to obtain samples are as close to the emission source as possible (the chemical's concentration is maximal at that point). Natural and man-made terrain features, such as hills, rows of buildings, and valleys sometimes aid the collector by channeling emissions. When these features are close to a particular facility, the collector uses the downwind side, if possible, for sample collections, as emissions remain concentrated due to the channeling effect. The collector determines where downwind typically is for the site and collects environmental samples from that point. For collection in a possibly contaminated location (if the situation permits), he uses a detector kit, such as the M18A2, initially to determine if a possible vapor hazard exists from known chemical agents. Also, he uses the kit to test possible toxic agent munitions. He takes air samples with the white strip tubes and saves them for laboratory analysis. Small air samplers also enable the collector to obtain vapor samples from alleged toxic agent munitions at a safe distance while EOD personnel render the munitions safe. If EOD personnel are not on the scene, the air sampler can be started, but the collector should stand at a safe distance while the sampler is operating.

E-6. **How:** Contaminants are sampled for later identification by using devices that draw air through filter material. The fragrances of these products are volatile organic compounds that can be absorbed on the filter and skew analytical results. Smoke also severely interferes with the air sampling; therefore, the collector should avoid cigarette, vehicle exhaust, and campfire smoke. Shipboard sampling operations must consider the products (for example, fuels, solvents, and gases) that are present and can cause false readings. The primary method for collecting air samples is with the PAS-1000 automatic air sampler with Tenax tube for a total of 3 to 4 minutes, when possible. The collector places the Tenax tube in a 2-1/4-inch piglette after taking the sample. (A pig or piglette is a heavy-duty metal container designed to contain small sample containers for transport to the laboratory.) He seals the piglette around the cap either with pressure-sensitive or Teflon tape. Once the piglette is sealed, he places it into a plastic bag, folds the bag around the piglette in a circular motion, and inserts the first bag into the second bag and folds again. The collector uses any type tape to secure the plastic around the piglette after he makes the fold. He then places the piglette into a cooler or refrigerator during transport and transfer.

Note. Persons sampling air should not use cologne, perfume, insect repellent, medical creams, or strong soaps before taking a sample.)

Soil Samples

E-7. Soil is a good place to sample for toxic organic compounds. Soil may contain large amounts of compounds of interest. For best results, it is essential that the collector sample at the precise site of compound deposition.

E-8. **When:** A collector should sample as soon as possible after the alleged incident.

E-9. **Where:** A collector should recognize contamination by discoloration or apparent deposition of material on the soil's surface. If discoloration or deposition of material is evident, he uses a garden trowel or wooden tongue depressor to scrape up the soil. He collects only discolored soil or deposited materials, if possible. A collector should take multiple samples at different depths.

E-10. **How:** The collector should avoid direct contact with the sample. He takes soil samples by scraping into a collection container the top 2 to 5 centimeters of soil from areas that appear to be contaminated. If the collector samples chunks or clods of earth, he selects those that are no larger than 10 by 5 by 1 centimeters. Also, he collects a control sample of the same soil type or texture. Using a knife, spoon, spatula, or similar item. he scrapes the top 2 to 5 centimeters of suspected soil into a collection container. He uses a glass bottle or jar as a container when available. He may also use plastic bags. When using glass bottles or jars, he seals the cap with either pressure-sensitive or Teflon tape and marks the container for identification. The collector places the sample in a bag, pushes out excess air, and seals it by folding over the open end two to three times and wraping with any tape when using plastic bags. He inserts the bag into a second bag, and then seals, tapes, and marks it for identification. If possible, he places samples in a piglette. It is important to seal the piglette well so volatiles do not escape. Also, the collector places a tamper-resistant seal across storage bags.

Vegetation Samples

E-11. Vegetation, as it exists, provides an excellent means for collecting samples.

E-12. **When:** The collector should sample as soon as possible after the alleged incident.

E-13. **Where:** When it is possible to figure out a probable center of attack in a vegetated area, the collector takes samples near the center of the area, about 100 meters upwind of the area. Also, the collector takes samples at several 100-meter increments downwind of the area. If the collector can discern a contamination pattern in the area, he should report it.

E-14. **How:** The collector makes a visual survey of the area and dons protective equipment before collecting vegetation. He enters the area from an upwind direction, collects vegetation samples that are different from normal, and selects leaves that have wilted or appear to have been chemically burned. He collects vegetation that appears to have liquid or solid substances deposited on its surfaces. This may appear as a shiny or moist area. The collector collects vegetation at several locations within the suspected contaminated area. He uses a cutting tool or any sharp object and cuts several affected leaves or a handful of grass whenever possible. The sample should never be crushed. The collector places sample into a plastic bag and squeezes the excess air out of the bag and seals it. He folds over the open end of the bag two to three times and wraps it with any type tape. The minimum size sample of value is three leaves or three handfuls of grass. One leaf is of little value, but should be collected. Bark is acceptable but not preferred. The collector marks the bag for identification, takes a control sample of similar material from an unaffected area, and then seals, tapes, and marks the control sample.

BIOMEDICAL SAMPLING

E-15. The purpose in collecting samples is to determine if a toxic substance is present in the natural environment or if it has been artificially introduced. Biomedical samples collected during an investigation include blood, urine, and tissue samples from living victims, and blood and urine samples from unexposed control sample persons. The "when, where, and how to sample" paragraphs are explained below.

E-16. **When:** The collector should sample as soon as possible after the alleged incident or report of activity.

E-17. **Where:** The selection of human sampling controls must be carefully considered due to potentially large deviations introduced by ethnic diets, racial or cultural differences, physiological makeup, and living conditions. Animal controls also warrant careful consideration.

E-18. **How:** Trained medical personnel should collect biomedical samples (human or animal). Collectors must have express authorization to collect biomedical samples from the dead to preclude any state or religious complications that could jeopardize a mission.

Note. For additional biomedical sample details, refer to FM 3-11.19.

RADIOLOGICAL AGENT SAMPLING

E-19. Radiological sampling operations are important to determine if and where a threat uses a radiological agent. The collection of samples and background information must be as detailed and comprehensive as possible. Each sample is processed and analyzed to provide data for analysis. Sample processing includes the collection of the sample, handling and transfer, and the associated administrative procedures. The administrative procedures ensure a documented chain of custody and a detailed description of the collection procedure. After laboratory analysis of the sample, intelligence personnel analyze the data to produce the intelligence to support operational requirements. An adversary may scatter radiological agents as radionuclide dust or as pellets of radioactive materials. The RA dust will cover vegetation, soil, and water surfaces. RA pellets do not cover vegetation surfaces like a dust, but remain on the surface of the soil. Also, RA pellets sink to the bottom of bodies of water. A SOF element can take samples of vegetation, soil, or water to collect the RA pellets or dust. The SOF element does a ground radiological reconnaissance (GRR) to locate the RA. Since the purpose of an RA sampling mission is to collect RA samples, the element should terminate the GRR after the RA is found. The radiological safety of the SOF element is a constant concern. RA-contaminated areas emit high doses of radioactivity; therefore, the element monitors the radiation throughout the RA sampling mission. The SOF element must not exceed the commander's operational exposure guide. The element chooses the environmental samples based on measurements the collector makes with the element's radiacmeter.

Water Samples

E-20. The SOF element should collect enough water to obtain information about the RAs.

E-21. **When:** Intelligence assets will provide information on the presence of indicators that may indicate the need for sample collection (such as higher-than-normal amounts of security or increased flow of smoke from a facility chimney or water from a water discharge pipe). The best time to collect water samples from allegedly contaminated field areas is just after the start of a rainstorm when runoff is beginning. Natural surface drainage will concentrate any remnants of radionuclides in depressions, streams, or ditches.

E-22. **Where:** The collector should collect water from the slow-moving areas of the stream or body of water.

E-23. **How:** If the collector believes that the use of RAs has occurred, he should use the AN/PDR 27, the AN/VDR 2, or any radiac instrument that measures dose rate to confirm that a sample is contaminated (hot). The collector immerses a capped or stoppered container to the desired depth. He removes the cap or stopper, allows the container to fill, and then caps the container. An alternate method for deeper water is to use a plastic, pump-operated siphon to pump water from a specific depth. The following minimum quantities for a sample are necessary for analysis of surface or water discharge sources—two liters, and drinking water sources—one liter.

Soil Samples

E-24. Soil is a good place to collect RAs (dust or pellets). It is essential that the collector monitor the sample before collection to ensure the sample is contaminated (hot).

E-25. **When:** The collector should sample as soon as possible after the alleged incident or report of activity.

E-26. **Where:** The collector collects RA samples from any place where a radiacmeter indicates contamination (hot). If RA deposits material is evident, the collector uses a garden trowel or the scoop provided in the M34 soil sampling kit to scrape up the soil. He collects only contaminated (hot) soil, if possible.

E-27. **How:** The collector should avoid direct contact with the sample. He collects soil samples by scraping the material from contaminated areas into a collection container. He collects a control (uncontaminated) sample of soil of the same type or texture. He scrapes the soil into a collection container using a knife, spoon, spatula, or similar item. When using glass bottles or jars, he seals the cap with pressure-sensitive tape and marks the container for identification. The collector then places the sample in one bag, pushes out excess air, and seals it by folding over the open end two to three times, and wrapping with any tape when using plastic bags. He inserts the first bag into a second bag, and then seals, tapes, and marks it for identification. If possible, he places samples in a piglette and places a tamper-resistant seal across the storage bag.

Note. The minimum quantities necessary for analysis are gamma spectrometry plus gross alpha or gross beta–2 kilograms of soil (approximately one square foot area, three inches deep) and gross alpha or gross beta only–100 grams.

Contaminated Vegetation Samples

E-28. The collector obtains samples of vegetation that appear to be different from normal. He selects leaves that have wilted or appear to have been chemically burned. He collects samples of vegetation that appear to have liquid or solid substances deposited on their surfaces (this may appear as a shiny or moist area).

E-29. **When:** The collector obtains samples as soon as possible after the alleged incident or report of activity.

E-30. **Where:** When it is possible to calculate a probable center of attack in an area, the collector obtains vegetation samples near the center of the area, about 100 meters upwind of the area, and in several 100-meter increments downwind of the area. If the collector can discern a contamination pattern in the area, he should report it.

E-31. **How:** The collector makes a visual survey of the area and dons protective equipment before collecting vegetation. He enters the area from an upwind direction, collects vegetation samples that the radiacmeter indicates are contaminated (hot), and collects vegetation at several locations within the suspected contaminated area. He uses a cutting tool or any sharp object and cuts affected leaves or grass whenever possible. The collector places at least three liters of densely packed sample in plastic bags or in a 1-gallon, wide-mouth plastic jar. He double-packs the bag or places the plastic jar in a plastic bag. He marks the bag for identification and collects a control sample of similar material from an unaffected area. He seals, tapes, and marks the control samples. The minimum quantity of a vegetation sample necessary for analysis is at least 3 liters per sample.

SAMPLE INFORMATION REPORTING, PACKAGING, AND SHIPMENT

E-32. Although a sample collected from an alleged attack area can be significant, it can become useless if the collector (SOF element) does not record essential information about its collection. Also, the sample can become useless if the collector improperly packs the sample and it breaks during shipment to an analysis center. The following paragraphs discuss information required when acquiring samples and describe the preferred methods for handling and packing samples for shipment. A complete history of the circumstances about each sample's acquisition is provided to the agency exploiting the sample. Critical information includes—

- Meteorological conditions at the time of sampling and the alleged attack.
- The length of time after the alleged attack when the sample was taken.
- Circumstances of acquisition, how the collector obtained the sample, and where the collector found the sample.
- A physical description. The physical state (solid, liquid, powder, apparent viscosity), color, approximate size, identity of the specimen (military nomenclature, dirt, leaves), and dose rate (if radiologically contaminated).
- Circumstances of agent deposition. The type of delivery system, a description of how the weapon functioned, how the agent acted on release, sounds heard during dissemination, a description of any craters or shrapnel found associated with a burst, and colors of smoke, flames, or mist that may be associated with the attack.

- Agent effects on vegetation. A description of the general area (jungle, mountain, grassland) and changes in the vegetation after agent deposition (color changes, wilting, drying, dead) in the main attack and fringe areas.
- Agent effects on humans. How the agent affected personnel in the main attack area versus fringe areas; the duration of agent effects; peculiar odors that may have been noticed in the area before, during, or after an attack; measures taken that alleviated or worsened the effects; and the approximate number of victims and survivors (including age and gender).

SAMPLE IDENTIFICATION AND CONTROL

E-33. To prevent confusion, the collector uses the sample identification number when referring to the sample or to information concerning its acquisition. A sample identification number contains the following information:

- *Country of Acquisition.* This two-digit alphabetic code stands for the country (established by DIAM 58-13, *Defense Human Resources Intelligence Collection Procedures*) from which the collector took the sample.
- *Date Acquired.* This six-digit numerical code stands for the year, month, and day that the collector took the sample.
- *Sample Sequence Number.* This three-digit numerical code is assigned by the CRD. It begins each collection day. The first sample collected is 001, the second 002, and so forth.
- *Sampler Identification.* This two- or three-digit alphabetic abbreviation represents the sampler's first and last name. When the sampler's identity must be protected, he should code the identity using XA through XZ and then XXA through XXZ, if necessary. The collector maintains an index of codes and identities separately within the classified files so that the sampler can be recontacted. Example of sample identification number: 850115-002-JD LA–Collector took sample in LAOS850115—Sample obtained on 15 January 1985 002. This is the second sample obtained on 15 January 1985 JD—John Doe took the sample. Samples must be carefully controlled to be of greatest value. A chain of custody must be recorded on the DD Form 1911, Material Courier Receipt. The collecting element assigns an identification number and affixes it to the sample or its container to aid in the identification of samples.

ACQUISITION AND SHIPMENT OF SAMPLES

E-34. The collecting element provides a formatted message for transmission when possible. During SO in a theater in which a SOF HQ is deployed, the collecting element transmits the message via the fastest means through the fewest channels to the radiological-chemical and biological sampling control element (R-CBSCE). If an R-CBSCE has not been deployed to the AO, sometimes in a low-sample volume peacetime operation, the collecting elements transmit the message via the fastest means through the fewest channels to the message addressees shown in the example. In addition, a written report accompanies each sample or batch of samples. The collecting element properly classifies the acquisition message. An acquisition message contains the following information:

- The sample identification number is a part of the subject line if only a single sample is in the text. Otherwise, reference should be made to the sample number within the message body with its background information. If the logistics base team ships the sample immediately, then it must include the shipment date, the mode of transportation, courier identification, the air bill of lading number, the flight number, the destination, and the estimated time of arrival in the message. In addition, the element should maintain the chain-of-custody document.
- Background information surrounding the sample.
- Questionable circumstances surrounding acquisition of a sample.
- The name of another country or agency that got a sample from the same event or area and is not shown on the message address.
- A recommended priority and rationale for analysis to guide the analysis center on the operational element's assessment of the potential value of the sample.

- All details that relate to the acquisition of the sample despite how insignificant they may seem to the collector.
- Disposition of samples according to their physical category.

E-35. The team ships all samples via the fastest, safest means (preferably via TEU) to the theater R-CBSCE or to a location that the R-CBSCE designates. If there is no R-CBSCE in-theater, the team sends the samples IAW preplanned instructions from the Radiological, Chemical, and Biological Analysis and Technical Evaluation Board (R-CBATEB) established at the Chemical Research, Development, and Engineering Center (CRDEC), Aberdeen, Maryland.

E-36. The R-CBATEB should be involved during the mission-planning process for technical and specialized support. The R-CBATEB will direct, in advance, that the collectors send the samples to the particular locations, dependent on the category of the sample. To decide the final destination of the sample, the R-CBATEB uses considerations, such as "Is the sample chemical or biological in content? Is the sample content completely unknown? Is the sample a possible combination of chemical and biological material?"

E-37. Regardless, the R-CBATEB must be notified earlier than receipt of the sample so additional instructions or deviations from standard instructions can be given. The collector ships RA samples via the fastest, safest means (preferably via TEU) to the radiological laboratory at the U.S. Army Hygiene Agency, Edgewood, Maryland. Before shipment, the collector contacts Commander, Technical Escort Unit, ATTN: SMCTE-OPE, Aberdeen Proving Ground, MD 21010.

E-38. The TEU controls the transport of samples to their final destination. The TEU should **not** ship suspected toxic samples or munition systems to the continental United States (CONUS) technical centers or intelligence agencies without coordination and before approval by the recipient.

WITNESS INTERVIEWS

E-39. Interviewing an alleged victim or witness is the most critical phase of an investigation. Generally, if the mission requires interviews with alleged victims or interrogation of threat forces, then trained interrogation teams should accompany the SOF element. Although sample collection is important in defining allegations of agent use, the interview process remains the most important phase of an investigation. Only through intereviews can background information, attack data, and agent dissemination be discerned about an alleged attack. Each collector must constantly be aware of how he may unconsciously influence a witness's testimony. Vocal tones, facial expressions, body language, and the manner in which a collector poses questions can affect testimony. Therefore, SOF elements must constantly monitor themselves, interpreters, and the interviewee. The types of questions used are monitored to ensure that they do not lead the witness toward a foregone conclusion. The following material covers, in detail, the rationale and techniques used for successful interviews. It is to be used as a guideline.

ELEMENTS OF PROPER INTERVIEWING

E-40. Each interview should be conducted in a way that is as psychologically comfortable for the witness as possible. Collectors using an interpreter should position themselves so that they can monitor the witness and the interpreter. By doing this, the collector maintains control of the interviewer's direction and speed. A tape recorder may preserve actual conversation that could be reviewed later. Key interview elements are as follows:

- When interviewing more than one person in a group of people, ensure that each person is questioned alone. This prevents any cross-pollination of ideas.
- Questions should not lead to a yes- or no-type answer. If the witness does not understand the question, he or she may respond with yes to avoid displeasing the collector. This response could result in a rapid but inaccurate interview.
- Do not become emotionally involved with the state of affairs or surroundings of a witness during an interview. These actions may mislead the collector and skew the results. The collector must remain hardened to the given task.
- Be aware that disinformation and propaganda may be presented. Testimony should describe scientific reality and not a social or political truth.

- Understand that many people have neither the education nor the means to establish the scientific causality of an event. Because of this, the witnesses may identify a wrong factor as the cause of the event. While accounts are totally sincere, they also may be inaccurate.
- Do not assume anything about information received surrounding an investigation. Misinformation operations of varying intensity and sophistication can come from any group of people. Political webs are complex and collectors must not allow themselves to be manipulated.

BACKGROUND INFORMATION

E-41. The interviewer uses information about a witness's social and environmental background to help establish his credibility and relationship to an alleged attack. It also helps calm a witness and sets the tone of the interview.

E-42. The most important part of the background is establishing the correct names and all aliases of the witness. This is critical. In multicultural societies, individuals often use different names that correspond to each society in which they exist. Without all names, recontacting a witness may be impossible. Because of the confusion in combat areas, a photograph of the witness can often aid in recontacting the witness.

E-43. The interviewer should establish the witness's military training and service. This information often helps in detecting a witness's possible political motives. Understanding a witness's degree of training also helps in building credibility.

ATTACK DATA AND AGENT CHARACTERISTICS

E-44. The description of how an alleged CBRN attack occurred is critical in determining whether or not an attack occurred. A collector's questioning is most difficult during this part of an interview. A collector should ensure that the witness is not led toward any conclusion. Often, the best way to proceed is by asking questions such as "What happened next?" or "What was it like?" This way, the witness can describe events in his own words without being influenced by the collector.

E-45. The collector should always ask questions that require the witness to describe or explain a situation. During questioning, the collector should not assume that any specific event occurred. For example, instead of asking, "What color was the agent?" the collector should instead ask, "Was there a color associated with the event?"

E-46. If the event involved a weapon, the collector should ensure that his questioning derives information on how the weapon functioned. Information that shows the witness's awareness of a difference between high-explosive and toxic agent weapon functioning is also important.

COLLECTING MATERIAL AND SAMPLES

E-47. Collection of material and environmental CBR samples is performed for several purposes: determination that an attack occurred, identification of agents used, specifications of delivery systems used and country of origin, and the determination of the level of CBR technology involved. Evidence reliability is of extreme importance. Therefore, the collection of samples and background information must be detailed and comprehensive as possible. Information presented by witnesses must be screened to ensure that hearsay is not substituted for accurate reporting. Key factors to remember include the following:

- Each CDA will be prepared to conduct sampling missions, either deliberate or hasty.
- Hasty sampling missions will be conducted as targets of opportunity arise using the sampling jump kit, which the CDA will carry on each mission.
- Deliberate sampling missions will be conducted IAW the mission sampling plan using the facility ChemBio sampling kit. The sampling vests will be tailored to the plan with the following items:
  - Bio: teal.
  - Wipes: orange.
  - Solids: yellow.

    - Liquids: blue.
- All samples will be properly packaged, labeled, and documented for transfer of custody.
- Before all sampling, the area will be photographed.

SAMPLING PRIORITIES

E-48. Background information for each collected sample must be detailed, simple, and clearly stated. All samples will fall into one of the following priority categories:

- *Priority I.* These samples are of bulk agent (contents of drums, barrels, final lab product) and delivery systems, including masks worn by deceased personnel.
- *Priority II.* The environmental samples (soil, surface, liquid, vegetation, and biomedical) are from areas were alleged CBR attacks have occurred.
- *Priority III.* This category is the acquisition of CBR defensive materials, such as antidote kits, decontamination equipment, detection gear, and protective equipment.

SAMPLING CONSIDERATIONS

E-49. The type of sampling may vary based on the nature, source, type and method of dissemination and location of the site. Normally, the best location for sampling is where casualties have occurred, where there are many wilted or discolored plants, or where there are many dead animals (fish or birds). This is not always the case when dealing with biological agents due to an incubation time period. Other considerations include the following:

- Solid samples (powders, solids, paints, metals), if collected at an incident scene, impact area, blast zone, operating facilities and locations where runoff may collect, may be useful. Look for areas that exhibit stains, powdering, or particulate matter on surfaces, vegetation, or on the ground. Less-preferred areas are those areas exposed to direct sunlight and high temperatures. Stains on walls, floors, or carpets, and crusting around valves and windowsills are also excellent sampling locations.
- Other than casualties, aerosols may leave little residue. Water, vegetation, and PPE (especially filters) downwind from the sampling site may provide useful samples.
- Blanks or control samples should be prepared in the same manner as the actual sampling. The control sample is collected upwind of the site that is known to be free of contamination. The control sample determines if the contamination is naturally occurring or not. Comparison sampling ensures that proper procedures were followed when sampling was conducted. In same circumstances, a suitable blank (samples) may be difficult to obtain. When a sampling is questionable, blanks will consist of an unopened or unused sampling tool and sampling jar for each sample taken. If time allows, controls will be similar to the samples taken.
- Soil samples should be taken over a surface area 3 1/2 inches by 3 1/2 inches to a depth of no more than 1/2 inch (true required depth is dependent on absorption of substance into soil). Samples should be taken as close to the center of contamination as possible. Samples may be taken near bodies of fallen victims. When sampling plants, seeds, and any debris, they should be placed in separate containers. Prepackaged sterile spoons or scoops will be used to collect soil samples. Fresh, sterile spoons or scoops will be used for each sample taken.
- Stones should be no more than 1/4 inch to 1/2 inch. These samples should be placed in a plastic freezer bag. Volume of stones should be approximately 200 to 300 milliliters.
- Snow samples should be collected from the layer of suspected exposure to chemical or biological agents. Should new snow have fallen, coordination through the Staff Weather Officer should be made, then a determination will be made on how much new fallen snow has occurred. This will aid the team in determining how much snow should be removed before coming into contact with possible contaminated snow. Surface area to be sampled is 3 1/2 inches x 3 1/2 inches to a depth of no more than 1/2 inch.

- Vegetable, leaves, grasses, and grain matter should never be collected by hand. These require the use of scissors and forceps. Particular attention should be paid to the discoloration or withering of the matter.
- Filters from casualties are of potential value due to the entrapment of agent inside the filter. Filters should be individually placed in 6-milliliter plastic bags. Each filter should be separately bagged and noted. When removing the filter from the casualty, ensure the casualty is deceased before removing filter from mask.
- Samples from walls, vehicles, or other types of immovable objects should be taken by scraping the contaminated surface and collecting the scrapings into a sample jar. Rubbing the surface with dry cotton wool or cotton wool soaked in distilled water, acetone, or another suitable solvent may be another way to secure a sample. When using a solvent to secure the sample, personnel should not dip the cotton wool into the solvent; rather, they should pour the solvent onto the cotton wool. This method will prevent any cross-contamination.
- Where biomedical samples cannot be taken, then swipes will be taken of casualties. Using sterile swabs in tubes, both nasal passages, both ears, and the gum line will be swiped along with a picture of the casualty.
- Fabrics such as clothing and upholstery may be another source for sampling. Using a scalpel, personnel should cut no more than a 3 1/2-inch x 3 1/2-inch square. For carpeting, personnel should cut no more than a 1 1/2-inch x 1 1/2-inch square. Attention should be paid when securing this type of sample. If a fabric, upholstery, or carpet is stained, the entire stained area should not be cut out and treated as a sample. The sample should consist of part of the stained area and part of the unstained area. Using forceps, personnel should place the item in a sample jar.
- Sampling team should have enough sampling equipment to take a minimum of 10 samples of all necessary types (vapor, soil, snow, or water).
- Small dead animals (birds, rodents) may also be a source of samples. Personnel should ensure the animal is dead before handling it. Personnel should never handle carcasses by hand. Heavy tweezers, tongs, or forceps should be used to place the sample in a plastic bag. When closing the bag, as much air as possible should be removed from it without damaging the sample. The sample will be logged in the Evidence Collection Form.
- Individually sealed sterile swabs may be used to collect liquid samples. Personnel should dab the swab into the liquid and hold until the swab absorbs as much liquid as possible. Personnel should place the swab into a small container. Personnel should place the lid over the mouth of the container, pinning the swab stick against the side of the mouth and the lid. Holding the lid and container, personnel should break off the swab stick allowing the swab to remain in the jar, and close the lid. The excess stick may be thrown into a waste container. It should be noted that for chemical samples the jar should be made of glass. This same method may be used to collect dry biological samples. The container for dry biological samples may be made of plastic or glass.

Note. The glass (brown) container should be used for either chemical or biological material, and the plastic one for biological material only.

GENERAL SAMPLING INSTRUCTIONS

E-50. The collection of samples is an integral part of chemical agents being used in an attack. The types of samples taken and the collection methods depend upon the circumstances encountered by the collector. The individual collecting the sample should—

- Plan each use of the Nitrile gloves to avoid cross-contamination. The M34A1 Kit contains only four pairs; carry excess gloves as needed.
- Use M-8 paper to confirm the presence of suspected liquid chemical agents.
- After each sample collection, discard used gloves and other components that may cause cross-contamination. Items may be left at sampling site, returned as samples themselves, or disposed of IAW decontamination site procedures.

- Take outdoor samples—one sample upwind and out of the sample site. This one will become the control sample. Assign it a Sample Control Number and note that it is the control sample. If sampling for Priority I, a control sample is not required.
- Use extreme caution when using cutting tools or scissors in the contaminated environment so no cuts or nicks are made in your PPE gear.
- Take care not to cross thread lids on the jars. Leakage of jar contents will occur.
- Write as much information as possible on sample documentation forms and custody seals before putting on PPE gloves and Nitrile gloves.
- Nick the plastic packaging material before the sampling mission or remove the sampling equipment and seal it in Ziploc-type bags with tabs. Either technique helps in opening the equipment on site.
- Make sure the custody seal sticks to the Teflon jars. A custody seal is mandatory on the sealed edge of the Whirl-Pak bag.
- At a minimum, ensure three Soldiers go down to the sampling site—one sampler, one packager, and one for security.
- Ensure that one Soldier samples, while another serves as packager and prepares the packaging equipment. The packager uses Teflon tape around the threads of the Teflon jars to prevent leakage.
- Place completed samples into a cooler with dry ice or instant ice packs when possible. Place an inventory inside a plastic bag and tape it to the inside lid of cooler. Seal the cooler with tape.
- Be careful when using commercial coolers. Pad the inside of the cooler to prevent the contents from banging around.

E-51. Sampling operations are particularly important if a potential adversary uses previously unknown agents or if an adversary allegedly uses a CBRN agent first. Therefore, the collection of samples and background information must be as detailed and comprehensive as possible. The different types of samples and the process in handling each is explained in Figures E-2 through E-4, pages E-11 through E-17.

TASKS	PROCESS STEPS
Prepare the tubes.	• Step 1. Select the appropriate tubes for the measurement required. • Step 2. To determine number of compressions required per tube, read the instruction sheet enclosed in the sampling tube container. • Step 3. Open both tips of the tube using the Draeger tube opener. • Step 4. Insert the Draeger tube into the pump with the arrow on the tube pointing to the pump.
Take a reading.	• Step 1. Check the number of strokes required from the Instructions for Use of the Draeger Tube. (Located on the inside of the tube container. It varies depending on sample.) • Step 2. Hold the pump so that the end-of-stroke indicator and stroke counter are facing you. • Step 3. Squeeze the pump until it stops. • Step 4. Release the pump until the bellows is fully expanded. • Step 5. Continue until the stroke counter registers the number prescribed in the Instructions for Use sheet.
Package the sample.	• Step 1. Remove the sample tube from the pump. • Step 2. Place the tube in sealer, rigid, piglette. Use Teflon tape and caps to seal the ends of the pipe.

Figure E-2. Air and vapor sampling with Draeger kits

TASKS	PROCESS STEPS
Package the sample (continued).	• Step 3. Remove the 7-inch x 11-inch Whirl-Pak bag from the kit, as follows: ▪ Tear off the top portion of the bag along the perforated edge. ▪ Using the white tabs, pull bag apart to open. ▪ Drop the jar into the bag. ▪ Remove excess air from the bag. Then, while holding metal tabs, whirl the bag around three times. ▪ Bend the wire ends onto the bag to secure and store the contents. ▪ Write the Sample Identification Number on the custody seal and apply the custody seal over the rolled edge of the Whirl-Pak bag. • Step 4. Collect any other required samples from this site and prepare each sample as indicated. • Step 5. Place up to three Whirl-Pak bags with jars into the Amber Sample Bag. • Step 6. Remove excess air from Amber Sample Bag and roll down the top of the bag. • Step 7. Wrap tape all the way around the Amber Sample Bag making at least three turns. (After tearing tape off the roll, try to fold a quick-pull tab in the tape so it is easy to grasp again.) • Step 8. Write the sample type (soil, surface, liquid, or air) on tape, the number of samples in the bag, and the date-time-group. Initial the sample. • Step 9. Place all sealed Amber Sample Bags into a single drawstring bag.

Figure E-2. Air and vapor sampling with Draeger kits (continued)

Note. Be careful when opening tubes since glass splinters may come off. Use the Draeger tube opener and not the pump to open tubes. The tube opener collects discarded tips and prevents glass splinters from entering the pump.

Note. Have the piglette cap prepared with pressure-sensitive or Teflon tape because it is difficult to work with tape when wearing gloves.

SOIL SAMPLES
• Step 1. Locate the sampling area. • Step 2. Look for the following: ▪ Discolored and oily-looking spots. ▪ Dead animals. • Step 3. Using the following steps, take samples from three points for each site (using a different jar at each point), 100 meters upwind (control sample), GZ, and 100 meters downwind. • Step 4. Write the suspected chemical agent contamination (if known) and fill in the sample documentation. • Step 5. Remove from the kit a pair of Nitrile overgloves, if needed. Use scissors if necessary to open the packaging. Place Nitrile gloves over MOPP gloves. • Step 6. Prepare one jar at a time by removing the jar from packaging, opening, and placing Teflon tape around the threads.

Figure E-3. Storing samples in the amber sample bag

SOIL SAMPLES (continued)

- Step 7. Scoop a thin layer of topsoil (no more than 1/2-inch deep) from a small area into the sample container. Fill the sample jar to no more then 75 percent of its volume.
- Step 8. Screw the cap on tightly and pass the sample to the packager.
- Step 9. Remove the 7-inch x 11-inch Whirl-Pak bag from the kit as follows:
  - Tear off the top portion of the bag along the perforated edge.
  - Using the white tabs, pull the bag apart to open.
  - Drop the jar into the bag.
  - Remove excess air from the bag. Then, while holding metal tabs, whirl the bag around three times.
  - Bend the wire ends onto the bag to secure and store the contents.
  - Write the Sample Identification Number on the custody seal and apply the custody seal over the rolled edge of the Whirl-Pak bag.
- Step 10. Collect any other required samples from this site and prepare each sample as indicated.
- Step 11. Place up to three Whirl-Pak bags with jars into the Amber Sample Bag with the sample documentation.
- Step 12. Remove excess air from the Amber Sample Bag and roll down the top of the bag.
- Step 13. Wrap tape all the way around the Amber Sample Bag, making at least three turns. (After tearing tape off roll, try to fold a quick-pull tab in tape so it is easy to grasp again.)
- Step 14. Write the sample type (soil, surface, liquid, air) on tape, the number of samples in the bag, and the date-time-group. Initial the sample.
- Step 15. Place all sealed Amber Sample Bags into a single drawstring bag.

SURFACE SAMPLES

- Step 1. Locate the sampling area.
- Step 2. Using the following procedures, take samples from three points for each site (using a different jar at each point), 100 meters upwind (control sample), GZ, and 100 meters downwind.
- Step 3. Write the suspected chemical agent contamination (if known) and fill in the sample documentation.
- Step 4. Remove from the kit a pair of Nitrile overgloves, if needed. Use scissors if necessary to open the packaging. Place Nitrile gloves over MOPP gloves.
- Step 5. Prepare one jar at a time by removing the jar from packaging, opening, and placing Teflon tape around its threads.
- Step 6. Open jar; use tweezers to remove the swipe from the jar. Squirt or pour a small amount of distilled water or acetone onto the surface to be sampled. Holding the wipe with tweezers, blot the target surface (an area about the size of your palm) with the swipe. Place the swipe back into the jar.
- Step 7. Screw the cap on tightly.
- Step 8. Remove the 7-inch x 11-inch Whirl-Pak bag from the kit as follows:
  - Tear off the top portion of the bag along the perforated edge.
  - Using the white tabs, pull the bag apart to open.

Figure E-3. Storing samples in the amber sample bag (continued)

SURFACE SAMPLES (continued)
▪ Drop the jar into the bag. ▪ Remove excess air from the bag. Then, while holding metal tabs, whirl the bag around three times. ▪ Bend the wire ends onto the bag to secure and store the contents. ▪ Write the Sample Identification Number on the custody seal and apply the custody seal over the rolled edge of the Whirl-Pak bag. • Step 9. Collect any other required samples from this site and prepare each sample as indicated. • Step 10. Place up to three Whirl-Pak bags with jars into Amber Sample Bag with sample documentation. • Step 11. Remove excess air from Amber Sample Bag and roll down the top of the bag. • Step 12. Wrap tape all the way around Amber Sample Bag, making at least three turns. (After tearing tape off roll, try to fold a quick-pull tab in tape so it is easy to grasp again.) • Step 13. Write sample type (soil, surface, liquid, or air) on tape, the number of samples in the bag, and the date-time-group. Initial the sample. • Step 14. Place all sealed Amber Sample Bags into a single drawstring bag.

Figure E-3. Storing samples in the amber sample bag (continued)

Note. Sample documentation must state what type of swipe was used and what type of reagent was used.

E-52. When sampling liquids from open sources, pools, lakes, or streams, the sampler should avoid placing the tip of the extension tube to the bottom of the liquid source because it could draw in debris. When sampling for contamination in water, the sampler should vary the depths of taking the samples because different chemicals have different weights.

LIQUID SAMPLES
• Step 1. Locate the sampling area. • Step 2. Look for the following: ▪ Droplets on vegetation. ▪ Containers (drums, barrels). ▪ Stagnant pools with oily globules or suspended solids. ▪ Streams or ponds with dead animals or fish. • Step 3. Using the following procedures, take samples from three points for each site (using a different jar at each point), 100 meters upwind (control sample), GZ, and 100 meters downwind. • Step 4. Write the suspected chemical agent contamination (if known) and fill in the sample documentation. • Step 5. Remove from the kit a pair of Nitrile overgloves, if needed. Use scissors if necessary to open the packaging. Place Nitrile gloves over MOPP gloves. • Step 6. Prepare one jar at a time by removing the jar from packaging, opening, and placing Teflon tape around its threads.

Figure E-4. Storing samples in the blue sample bag

LIQUID SAMPLES (continued)

- Step 7. Attach extension tube to the tip of the syringe. Place the tip of the tube in the suspected contamination. Pull back the plunger and draw up the maximum amount of liquid into the syringe.
- Step 8. Position tip of tube over the jar opening and expel liquid into jar.
- Step 9. Take multiple samples to ensure jar is filled to 75 percent of its volume.
- Step 10. Screw the cap on tightly.
- Step 11. Remove the 7-inch x 11-inch Whirl-Pak bag from the kit as follows:
  - Tear off the top portion of the bag along the perforated edge.
  - Using the white tabs, pull the bag apart to open.
  - Drop the jar into the bag.
  - Remove excess air from the bag; holding metal tabs, whirl the bag around three times.
  - Bend the wire ends onto the bag to secure and store the contents.
  - Write the Sample Identification Number on the custody seal and apply the custody seal over the rolled edge of the Whirl-Pak bag.
- Step 12. Wrap tape all the way around Blue Sample Bag, making at least three turns. (After tearing tape off roll, try to fold a quick-pull tab in tape so it is easy to grasp again.)
- Step 13. Collect any other required samples from this site and prepare each sample.
- Step 14. Place up to three Whirl-Pak bags with jars into Blue Sample Bag with sample documentation.
- Step 15. Remove excess air from Blue Sample Bag and roll down the top of the bag.
- Step 16. Wrap tape all the way around Blue Sample Bag, making at least three turns. (After tearing tape off roll, try to fold a quick-pull tab in tape so it is easy to grasp again.)
- Step 17. Write sample type (soil, surface, liquid, or air) on tape, the number of samples in the bag, and the date-time-group. Initial the sample.
- Step 18. Place all sealed Blue Sample Bags into a single drawstring bag.

LIQUID SAMPLES (ALTERNATE)

- Step 1. Locate the sampling area.
- Step 2. Look for the following:
  - Droplets on vegetation.
  - Containers (drums, barrels).
  - Stagnant pools with oily globules or suspended solids.
  - Streams or ponds with dead animals or fish.
- Step 3. Using the procedures below, take samples from three points for each site (using a different jar at each point), 100 meters upwind (control sample), GZ, and 100 meters downwind.
- Step 4. Write the suspected chemical agent contamination (if known) and fill in the sample documentation.
- Step 5. Remove from the kit a pair of Nitrile overgloves, if needed. Use scissors if necessary to open packaging. Place Nitrile gloves over MOPP gloves.
- Step 6. Prepare one jar at a time by removing jar from packaging, opening, and placing Teflon tape around its threads.

Figure E-4. Storing samples in the blue sample bag (continued)

LIQUID SAMPLES (ALTERNATE) (continued)

- Step 7. Remove a scoop from the protective clear packaging.
- Step 8. Scoop approximately 70 milliliters of suspected contamination into a sample jar. Fill the jar to 75 percent of its volume.
- Step 9. Take multiple samples to ensure jar is filled to 75 percent of its volume.
- Step 10. Screw the cap on tightly.
- Step 11. Remove the 7-inch x 11-inch Whirl-Pak bag from the kit as follows:
  - Tear off the top portion of the bag along the perforated edge.
  - Using the white tabs, pull the bag apart to open.
  - Drop the jar into the bag.
  - Remove excess air from the bag; holding metal tabs, whirl the bag around three times.
  - Bend the wire ends onto the bag to secure and store the contents.
  - Write the Sample Identification Number on the custody seal and apply the custody seal over the rolled edge of the Whirl-Pak bag.
- Step 12. Collect any other required samples from this site and prepare each sample as discussed.
- Step 13. Place up to three Whirl-Pak bags with jars into the Blue Sample Bag with sample documentation.
- Step 14. Remove excess air from Blue Sample Bag and roll down the top of the bag.
- Step 15. Wrap tape all the way around Blue Sample Bag, making at least three turns. (After tearing tape off roll, try to fold a quick-pull tab in tape so it is easy to grasp again.)
- Step 16. Write sample type (soil, surface, liquid, or air) on tape, the number of samples in the bag, and the date-time-group. Initial the sample.
- Step 17. Place all sealed Blue Sample Bags into a single drawstring bag.

Note. This method is quicker, but the Soldier should take extra precaution to avoid splashing liquids on his MOPP suit.

VEGETABLE SAMPLES

- Step 1. Locate the sampling area.
- Step 2. Look for the following:
  - Discoloration.
  - Withered spots.
  - Oily droplets.
  - Any unnatural particularities.
- Step 3. Take samples from three points for each site (using a different jar at each point), 100 meters upwind (control sample), GZ, and 100 meters downwind.
- Step 4. Write the suspected chemical agent contamination (if known) and fill in the sample documentation.
- Step 5. Remove from the kit a pair of Nitrile overgloves, if required. Use scissors if necessary to open packaging. Place Nitrile gloves over MOPP gloves.
- Step 6. Prepare one jar at a time by removing jar from packaging, opening, and placing Teflon tape around its threads.

Figure E-4. Storing samples in the blue sample bag (continued)

VEGETABLE SAMPLES (continued)

- Step 7. Use tweezers to grasp material to be sampled and use scissors or another cutting tool to cut suspected contaminated vegetation. For grasses, cut near the base of the blades. For leaves, cut at the stem of the leaf. Place three to four samples in each jar. **Do not crush or smash vegetation.**
- Step 8. Screw the cap on tightly.
- Step 9. Remove the 7-inch x 11-inch Whirl-Pak bag from the kit as follows:
  - Tear off top portion of bag along perforated edge.
  - Using the white tabs, pull the bag apart to open.
  - Drop the jar into the bag.
  - Remove excess air from the bag; holding metal tabs, whirl the bag around three times.
  - Bend the wire ends onto the bag to secure and store the contents.
  - Write the Sample Identification Number on the custody seal and apply custody seal over rolled edge of Whirl-Pak bag.
- Step 10. Collect other required samples from this site and prepare each one as discussed.
- Step 12. Place up to three Whirl-Pak bags with jars into Blue Sample Bag with sample documentation.
- Step 13. Remove excess air from the Blue Sample Bag and roll down the top of the bag.
- Step 14. Wrap tape all the way around Blue Sample Bag making at least three turns. (After tearing tape off roll, try to fold a quick-pull tab in tape so it is easy to grasp again.)
- Step 15. Write sample type (soil, surface, liquid, or air) on tape, the number of samples in the bag, and the date-time-group. Initial the sample.
- Step 16. Place all sealed Blue Sample Bags into a single drawstring bag.

Figure E-4. Storing samples in the blue sample bag (continued)

MISCELLANEOUS SAMPLES

E-53. Chemical or biological munitions fragments, whether from a shell, bomb, rocket, grenade, or spent aircraft spray tanks, can be a highly definitive source of samples. Whole munitions (duds) are highly desirable but should be disarmed by a qualified EOD expert. If a piece of ordnance is suspected of being a chemical or biological round, and an EOD expert is not available, the sampler should stand off as far as possible and use vision aids (binoculars) to identify and note any markings. Small pieces of fragments should be packaged the same way as soil, water, or vegetation.

DANGER

Do not approach unexploded ordnance.

E-54. Used detector kits, gloves, or boots can be packaged and brought out as samples. When packaging large items such as boots, the sampler should use scissors to remove pieces of the item. He should also ensure it is double-bagged, sealed, and then placed into another bag.

E-55. Small animals, fish, and birds may be retrieved as samples. If they will fit into a Teflon jar, the sampler should package them as normal. If they are too big to fit in a jar, he should use a cutting tool to remove a thumb-sized portion of the intercostal muscle from the areas between the ribs, and then package it as normal.

CONTROL SAMPLES

E-56. The collection of environmental samples requires the collection of control samples. Control samples allow the analysis center to compare and determine whether a compound is naturally occurring in the environment. Soil, water, and vegetation samples should be taken 500 meters upwind of the alleged attack area. Control samples must be generically the same as those in an alleged attack area. For example, if the sampler collects leaves from an apple tree in an attack area, he should collect leaves from an apple tree outside the contaminated area. The size of an environmental control sample should be about the same size as one taken in the attack area.

SAMPLE REPORTING

E-57. One person other than the sampler or packager will keep a detailed reconnaissance log of pertinent information in a notebook. This data is in addition to the DA Form 1971-6-R, (Chemical/Biological Specimen Documentation), that is packaged with the samples. All entries will be identified by the sample number. The reconnaissance log will be opened when the sampling team leaves the objective rally point (ORP) or hide site and closed after the team passes the sample to the proper agency. Each entry will contain the following information:

- Sample identification number.
- Physical description of environmental sample or object photographed.
- Date and time of collection.
- Weather at time of sampling.
- General description of the area where samples or photos were taken, to include grid coordinates, azimuths, or distances to known landmarks.
- Description of any items of interest in the immediate area (condition of bodies, craters, vegetation, dead animals, birds, fish, odors, equipment).

SAMPLE IDENTIFICATION

E-58. To prevent confusion, the sampler uses the sample identification number when referring to the sample or to information concerning its acquisition. The number contains the following:

- *Country of Acquisition.* This two-digit alphabetic code stands for the country from which the collector took the sample. A complete listing of country codes can be found in FM 3-11.19. Example—PR = Puerto Rico.
- *Date Acquired.* This six-digit numerical code represents the year, month, and day that the collector took the sample. Example: 2 July 2007 = 070702.
- *Sample Sequence Number.* The collector assigns this three-digit numerical code. It begins anew each collection day. Example: The first sample collected is 001, the second 002, and so on.
- *Sampling Unit UIC.* This code represents the sampling unit. Example: WA8TAA.
- *Sampler Identification.* This two- or three-digit alphabetic abbreviation stands for the sampler's first and last name. Example: JD = Joe Dirt, took the sample (Figure E-5). Example of complete identification number: RQ-070702-001-WFG1AA-JD.

PROJECT CODE: TECH SOIL **SAMPLER:** JOE DIRT

SAMPLE NUMBER: SO001-04/MMDDYY/3–5 FEET

TIME COLLECTED: 1435 **PRESERVATIVE:** 4C

TYPE OF SAMPLE: ENVIRONMENTAL **ANALYSIS:** ACROLEIN

Figure E-5. Sample label

CHAIN OF CUSTODY

E-59. Samples must be carefully controlled to be of greatest value. A chain of custody must be recorded using FM 3-11.19, Figure E-2, *Sample or Specimen Custody Document.*

E-60. The Specimen Custody Document (in FM 3-11.19) can be completed by the collector or the recipient. If it can be coordinated for the recipient to complete, it makes the collector's job a lot easier. The collector must ensure he retains a copy of the chain of custody. The country codes are contained in FM 3-18, *Special NBC Reconnaissance (LB Team)*. The collector must also complete the following required reports found in FM 3-11.19:

- Sample Chain-of-Custody Form (Appendix E).
- Sample CB Incident Interview Form (Appendix E).

E-61. After the sample is taken, it must be evacuated immediately. The sampling unit coordinates its own assets and transports the sample to the STP. A qualified escort must accompany the sample during the entire evacuation process to ensure safety and a proper chain of custody. A technical escort is preferred during the entire process of evacuation but having one may not always be practical because of the limited number of TEUs. The technical escort takes the sample to the radiological, chemical, and biological sample collection point. If the determination is made to send the sample to CONUS for analysis, an additional technical escort must be coordinated to accompany the sample to CONUS from the port of debarkation until final hand-off to the receiving laboratory.

WORK AREA AND WASTE MANAGEMENT

E-62. Incremental to sample preparation and validity is having a clean work space. The 112th CRD uses aluminum foil placed on a flat surface near the sampling area to provide a clean work space to place equipment. In the event that aluminum foil is not available, commercial tarp material can be substituted.

E-63. Sampling waste can easily become a problem if not properly managed. Each work station **must** maintain a waste area for expended sampling pipettes and hazardous trash. Aluminum foil folded upward at the corners (to prevent spills) will be used to contain immediate waste at each station. At the completion of sampling, each station's waste will be consolidated into one waste bag, whether trash is to be removed or left in place.

This page intentionally left blank.

Appendix F

SOF Element Decontamination Options

UNSUPPORTED SOF ELEMENT DECONTAMINATION

F-1. When conducting unsupported SOF element decontamination, the initial action to be taken is to locate and secure an upwind decontamination site (also serves as an ORP). The same personnel tasked to set up the ORP will secure the site. The remaining members of the element (operational team) will assume MOPP4 and move to the contaminated area to conduct the mission. As the operational team conducts the mission, the decontamination site personnel assume MOPP in preparation for the return of the operational team. As the operational teams return to the ORP, each member is checked for contamination at a liquid- or vapor-contamination control line (CCL) using available detection equipment. If contamination is detected, the decontamination procedures outlined in Figure F-1, pages F-1 and F-2, should be followed.

STEPS	ACTIONS
1	While the operational element moves to the element, the remaining decontamination element members at the ORP set up a modified hasty decontamination site. The site will include an HL and a sump for disposal of contaminated clothing and equipment. As the operational element returns from the mission, one of the decontamination team members acts as the station operator/monitor, while the other ORP members provide security for the decontamination site.
2	Once the operational element reaches the HL, it stops and awaits direction from the site operator.
3	The site operator directs a decontamination element to check any sample or equipment found for contamination. If these are contaminated, the decontamination team will perform the required decontamination procedures.
4	Once decontamination has been performed, the decontamination teams place the sample or equipment in a Mylar bag (or other acceptable substitute) and hand it to another “clean” team member, who then seals the bag and places it on the clean side of the HL.
5	Once all collected equipment and/or samples have been disposed of, the decontamination team commences checking the operational teams for contamination. Personal equipment is removed from the operational team members and checked using the appropriate detectors. If contamination is found, the equipment will either be decontaminated at that time or placed in the sump (to be decontaminated at a later time). In either case, the equipment must be rechecked prior to reuse in order to ensure that it has been properly decontaminated. Once this procedure has been completed for the first operational team member, the site operator will direct that member to enter the decontamination site.
6	Using “buddy system” decontamination procedures, the first team member will decontaminate the second team member’s protective mask using a personnel and equipment decontamination kit. The first team member then rolls the protective mask hood of the second member, using extreme caution to prevent the transfer of contamination to the exposed neck area or the breaking of the mask seal during the rolling process.
7	Continuing the “buddy system,” team members remove the chemical protective overgarment (CPOG), battledress overgarment (BDO), and chemical protective boots (if worn). The use of knives, scissors, or other cutting tools is necessary for this step. ***Note.*** The cutting instrument being used must be decontaminated after each cut. Once CPOG, BDO, and boots have been removed and placed in the sump, that person moves to the next station (10 to 15 meters away and upwind of the garment removal area).

Figure F-1. Operational element decontamination procedures

STEPS	ACTIONS
8	The second station will be located at the CCL. This clearly marked line (approximately 10–15 meters upwind of the clothing removal station) is where personnel are assisted with the removal of the chemical protective gloves and boots. As with the first station, the boots will need to be cut to assist with their removal. Again, the cutting tool will need to be decontaminated after each cut. The assisted person is stopped on the downwind side of the CCL. The gloves are removed by pulling them inside out as they are being removed. Once removed, they are placed in the sump. After the gloves are removed, the boots are cut and the Soldier is assisted in removing the boots (one at a time). As the first boot is removed, the Soldier takes one step over the CCL with that foot. The second boot is then removed on the downwind side of the CCL. Both boots are then placed in the sump, and the Soldier proceeds to the final station (on the upwind side of the CCL).
9	At the final station, each Soldier's protective mask is checked again for contamination. If contamination is found, the mask is decontaminated again before removal. If found to be clean, the mask is removed (after the air has been checked for contamination).
10	All Soldiers are processed through the decontamination using the stated procedures until the operational team and decontamination team have been completed, leaving only the station monitor left in MOPP4.
11	The station monitor then polices all contaminated material in the decontamination station area and places it in the sump. The sump is closed, and the station monitor performs personnel decontamination on himself (removing protective clothing).
12	The grid coordinates are recorded and forwarded to higher HQ. The mission is continued.

Figure F-1. Operational element decontamination procedures (continued)

EXPEDIENT PERSONNEL DECONTAMINATION SYSTEM

F-2. The EPDS is designed to address SOF equipment shortfalls in personnel decontamination procedures and equipment. The system is a one-man, portable, lightweight system that does not displace an undue amount of an individual's combat load. The EPDS is a validated system that provides rapid effective decontamination procedures that are easily integrated into existing SO tactics. This system weighs less than 20 pounds, can be set up within 10 minutes, and can decontaminate up to 20 personnel at a rate of less than 5 minutes per individual.

F-3. EPDS tactical planning guidelines are as follows:

- Decontamination of the force will occur at the closest permissive site to the target permitted by the tactical situation. In some missions, such as maritime interdiction operations, decontamination will likely occur directly on the objective after it is secure.
- Timely and effective decontamination is critical to prevent CBRN casualties. SOF contamination challenges may be considerably higher than the standard 10/m2 that JSLIST-approved material is designed to protect against.
- CW breakthrough times on SOF PPE dictate the need to conduct decontamination at the soonest opportunity consistent with the tactical situation. CW breakthrough times are significantly reduced in case of saltwater-exposed PPE, further heightening the importance of rapid decontamination.
- The nature of SOF operations in the CBRN environment dictates that the use of a supporting force to conduct decontamination is often tactically infeasible. The SOF decontamination capability must reside completely within the force and be effective postmission for both healthy personnel and casualties.
- Contamination control is paramount. The reduction or elimination of the spreading of liquid or solid contamination off target and back to friendly forces, mission-critical mobility platforms, or forward staging bases is critical.
- The procedure and equipment should not produce undue logistical burdens in terms of training, acquisition, or maintenance.

F-4. The following is a generic sequence of events for a mission requiring EPDS in a potentially contaminated area. Figure F-2 depicts a basic layout for an EPDS decontamination site. Figures F-3 (page F-4) and F-4 (page F-5) provide the steps that are involved in one- and two-piece cutout procedures. A generic EPDS mission sequence is as follows:

- *Step 1.* Determine the presence of contamination or the possibility of contamination. Establish a contamination control area. Ensure all personnel who are contaminated remain in that area.
- *Step 2.* Call for EPDS.
- *Step 3*. Designate operating and security personnel for EPDS.
- *Step 4.* Establish HL, mark HL, and designate CCL.
- *Step 5.* Set up a decontamination line, considering environmental factors, such as wind, rain, and poor ventilation. Break out equipment and set it up according to space availability.
- *Step 6.* Upon completion of setup, direct contaminated personnel to begin an equipment drop. (All personnel working EPDS should decontaminate boots and gloves first.) Place all sensitive equipment that requires decontamination into equipment bags.

Note. Personnel should work in pairs whenever possible.

- *Step 7.* Establish a litter decontamination line if indicated. Include an emergency medical treatment (EMT) station in the hot zone.
- *Step 8.* Establish the triage area as the casualty collection point (CCP) and locate it on the clean side of the CCL.
- *Step 9.* Begin the decontamination process.

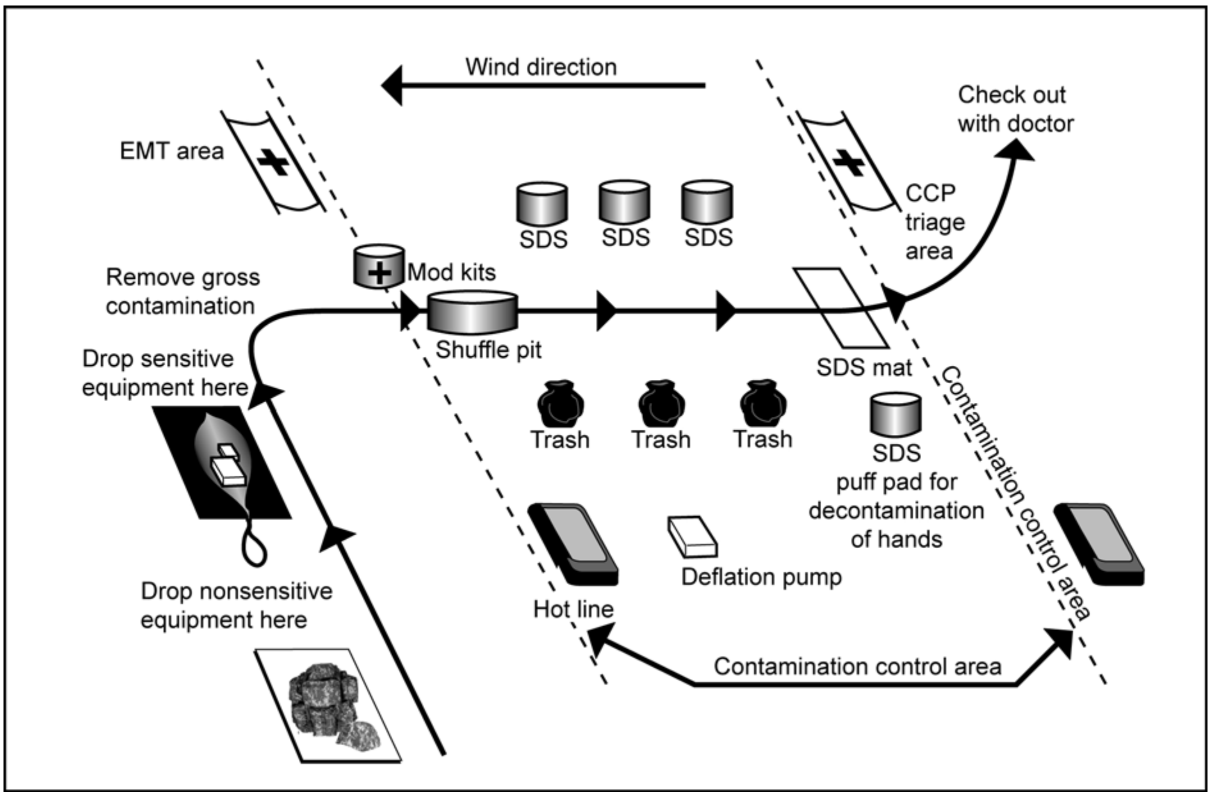

Figure F-2. Expedient personnel decontamination site

One-Piece Cutout

- Step 1: Direct breakout of Mk1 medical kits.
- Step 2: Take out M291s and M295s. Place kits in a pile at the hot line.
- Step 3: Decontaminate each other's hoods with the M295. If time permits, decontaminate as much area as possible to reduce any gross contamination and off-gassing.
- Step 4: Direct into first shuffle pit.
- Step 5: Decontaminate feet by shuffling feet in pit.
- Step 6: Direct to the next shuffle pit. (Cutters begin cut-out procedures).
- Step 7: Cut both straps off the hood and loosen the neck cord.
- Step 8: Direct contaminated person to bend forward at the waist.
- Step 9: Make sure cutter rolls hood up from the rear bottom as far as possible and gathers bottom into neck cord. (Cutter then cuts tails of cord if needed and decontaminates hands).
- Step 10: Cut wrist, waist, and ankle closures as appropriate for the ensemble worn. (Cutter decontaminates hands.)
- Step 11: Release or cut boot closures. (Cutter decontaminates hands.)
- Step 12: Make sure contaminated person steps out of boots. (Cutter decontaminates hands.)
- Step 13: Unzip zipper across the back (if fast-rope insertion and extraction system [FRIES]). (Cutter decontaminates hands.)
- Step 14: Start at the lower side of the zipper center (if dry suit, cut from center rear neckline) down one leg as far as possible. (Cutter decontaminates hands.)
- Step 15: Cut down other leg from area of buttocks down as far as possible. (Cutter decontaminates hands.)
- Step 16: Cut up from top edge of zipper through neck dam (if FRIES). (Cutter decontaminates hands.)
- Step 17: Remove suit forward, stripping down, and have contaminated person step out one foot at a time. Remove glove with garment; if not, strip gloves before CPU removal. (Cutter decontaminates hands.)

CPU REMOVAL

- Step 1: Start at top rear center and cut down middle of back. (Cutter decontaminates hands.)
- Step 2: Make sure contaminated person extends arms forward and down. (Cutter pulls forward and down, folding it inside out as best as possible to contain external contamination. Cutter decontaminates hands.)
- Step 3: Cut down one side of CPU trouser leg and have contaminated person step out of CPU trouser. (Cutter decontaminates hands.)
- Step 4: Strip off one Gore-Tex sock, then second, then one CPU sock, and then the second, having the contaminated person step onto safety pad. (Cutter decontaminates hands.)
- Step 5: Make sure contaminated person proceeds to mask drop area, decontaminates hands, and uses breath-hold technique with assisted mask removal from decontamination line.
- Step 6: Move to redress area and redress; move to exfiltration area.
- Step 7: Monitor and administer buddy-aid, if necessary. Ensure that personnel who develop symptoms of exposure are taken to the triage area for treatment.

Figure F-3. One-piece cutout

Two-Piece Cutout

- Step 1: Direct breakout of Mk 1 medical kits.
- Step 2: Take out M291s and M295s. Place kits in a pile at the hot line.
- Step 3: Decontaminate each other's hoods with the M295. If time permits, decontaminate as much area as possible to reduce any gross contamination and off-gassing.
- Step 4: Direct into first shuffle pit.
- Step 5: Decontaminate feet by shuffling feet in pit.
- Step 6: Direct to the next shuffle pit. (Cutters begin cut-out procedures).
- Step 7: Cut both straps off hood and loosen neck cord.
- Step 8: Make sure contaminated person bends forward at the waist.
- Step 9: Ensure cutter rolls hood up from the rear bottom as far as possible, gathers bottom into neck cord, and cuts tails of cord, if needed. (Cutter decontaminates hands.)
- Step 10: Cut wrist, waist, and ankle closures as appropriate for the ensemble worn. (Cutter decontaminates hands.)
- Step 11: Start at top rear center and cut down the back of the top garment. (Cutter decontaminates hands.)
- Step 12: Tell contaminated person to extend his arms forward and down, cutter pulls top forward and down (folding in on itself as best as possible to contain and isolate). Glove should come off with top; if not, remove gloves. (Cutter decontaminates hands.)
- Step 13: Cut down each side of legs. (Cutter decontaminates hands.) Grasp rear center of trouser, cut straps above where straps cross and allow to fall as contaminated person steps forward and away.
- Step 14: Release or cut boot closures. (Cutter decontaminates hands.)
- Step 15: Tell contaminated person to step out of boots. (Cutter decontaminates hands.)

CPU REMOVAL

- Step 1: Start at top rear center and cut down middle of back. (Cutter decontaminates hands.)
- Step 2: Make sure contaminated person extends arms forward and down. (Cutter pulls forward and down, folding it inside out as best as possible to contain external contamination. Cutter decontaminates hands.)
- Step 3: Cut down one side of CPU trouser leg, have contaminated person step out of CPU trouser. (Cutter decontaminates hands.)
- Step 4: Strip off one Gore-Tex sock, then second, then one CPU sock, and then the second, having the contaminated person step onto safety pad. (Cutter decontaminates hands.)
- Step 5: Make sure contaminated person proceeds to mask drop area, decontaminates hands, and uses breath-hold technique with assisted mask removal from decontamination line.
- Step 6: Move to redress area and redress; then move to exfiltration area.
- Step 7: Monitor and administer buddy-aid if necessary. Make sure personnel who develop symptoms of exposure are taken to the triage area for treatment.

Figure F-4. Two-piece cutout

F-5. The basic operating principles of litter decontamination include the following:

- Always follow management of life-saving ABCs (check airway, check for breathing, and check for circulation) first.
- Spot decontaminate cutaway of protective garment or mask to facilitate care of ABCs.
- Make sure a casualty that is affected in any ABC areas is not in the litter decontamination area.
- Always use the current decontamination media: 0.5 percent hypochlorite solution, M291, M295, and SDS.
- Use the Raven decontamination litter.
- For litter decontamination, use the cut out procedure similar to the onion peel procedure.
- Use the exact cut template that corresponds to the ensemble worn (currently JSLIST VII, FRIES, and DUI).
- To control the spread of contamination, ensure the hand of the cutter is decontaminated first. The hands and cutting tool must be decontaminated before each cut.
- For successful decontamination, first decontaminate the patient's boots and gloves.

F-6. The following procedures are specific to the EPDS litter casualty:

- Keep litter parallel to EPDS line.
- Ensure environmental factors and the casualty flow remain unchanged.
- Move casualties from the EMT station to the litter decontamination area on a Raven stretcher.

Note. Although not stated after each step, cutter should decontaminate hands and tools between every step or touch.

F-7. The decontamination site must have specific personnel on hand. At each site, there should be one hot line director, two scrubbers and cutters, and two or more medical personnel, determined by the number of medical or chemical casualties. The EPDS requires specific equipment and parts. Figure F-5, page F-7, provides the component data for the EPDS rucksack.

DIRTY EXFILTRATION DECONTAMINATION

F-8. The purpose of dirty exfiltration is to remove a contaminated SOF element from its tactical environment so that decontamination can take place in a permissive environment. Dirty exfiltration decontamination activities include decontamination for personnel using either a DTD or EPDS, and may or may not include spot decontamination of the exfiltration platform. Dirty exfiltration decontamination should occur as soon as tactically feasible after contamination. There are numerous issues to consider regarding the decontamination of exfiltration platforms in dirty exfiltration. The SOF decontamination element—

- Ensures the aircrews remain in place in the aircraft.
- Removes any additional protective lining, cover, or equipment from the exfiltration platform after one contaminated element has exited the platform.
- Checks the exfiltration platform for any residual contamination.
- Decontaminates the exfiltration platform to the maximum extent possible with available equipment.

Note. FM 3-11.5, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination*, contains additional decontamination details.

Item	Note	Quantity
Boundary Bag	Water is carried in a 5-gallon collapsible bladder inside a vector pack. If available, sea water may be used. Two boundary bags are cut down and used for the shuffle pit. One is used for a container.	3
Baja Bag		5
Large Hook Knife		3
Scissors		4
Chemlite, Blue	Blue chemlites are used to mark the bottom of decontamination bags or shuffle pits.	1
Chemlite, Red	Red chemlites are used to mark HL.	1
Chemlite, Green	Green chemlites are used to mark CCL.	1
Electric Scissors	Additional waterproof protective mask bags with equipment belts for carrying decontaminated media and cutters.	2
Poly Bag (7 ml)	Poly bags used for containment of removed PPE to reduce off-gassing in the decontamination area.	6
SDS		5
SDS Pad	SDS pads used to step on as a protective barrier after protective socks are removed.	1
68% Calcium Hypochlorite (6 oz)	Calcium hypochlorite is carried for biological agents.	2
Head Lamp		6

Figure F-5. EPDS rucksack component data

BASIC AIRCREW DECONTAMINATION ACTIONS

F-9. The decontamination actions identify a standard set of instructions to doff aircrew equipment and clothing after actual or suspected CBRN contamination. Figure F-6, pages F-8 and F-9, depicts how decontamination stations can be systematically arranged to use equipment and allow aircrew redress.

STATION 1
• ATTENDANT: Wipe (bleach, water, and paper towel) crew member above shoulders. • CREW MEMBER: Stow personnel items. **DUST HANDS** • ATTENDANT: Dust from knees to boots. • ATTENDANT: Carefully dust blower and hang on rack. **DUST HANDS** • ATTENDANT: Unsnap suspension assemblies on manifold from one side and reattach to other. Dust manifold and hang on rack. **DUST HANDS** • ATTENDANT: Remove harness, vest, life preserver unit (LPU), exposure suit, and so on. **DUST HANDS AFTER EACH ITEM** • ATTENDANT: Undo flight suit leg zipper and cut boot laces. **DUST HANDS** • CREW MEMBER: Remove boot using the boot remover. **DO NOT LET FOOT TOUCH THE GROUND** • ATTENDANT: Tube sock foot. Discard boot. Repeat step. **DUST HANDS AFTER EACH BOOT** • CREW MEMBER: Loosen suit cuffs and reattach Velcro. **DUST HANDS** • CREW MEMBER/ATTENDANT: Remove and discard Nomex gloves. **DUST HANDS** • CREW MEMBER: Ensure next station is clear. Keep equipment away from body and go to next station. • CREW MEMBER: Remove equipment from rack.
STATION 2
DUST HANDS • CREW MEMBER: Ensure next station is clear. Keep equipment away from body and go to next station. • ATTENDANT: Hang equipment on rack. Crew member and attendant should dust hands. Crew member steps into shuffle box and faces rack. • Liquid hazard area (LHA) ATTENDANT: Lower zipper on flight suit. **DUST HANDS** • CREW MEMBER: Face vapor hazard area. Assume race dive position. **MAINTAIN EYE CONTACT WITH ATTENDANT** • LHA ATTENDANT: Remove flight suit to knees. Remove Butyl gloves. Tube sock hands. **DO NOT TOUCH CREW MEMBER'S SKIN** **DUST HANDS** • LHA ATTENDANT: Remove suit from legs. Ensure tube socks are retained on crew member's feet or replace them. Discard suit. **DUST HANDS** • CREW MEMBER: Lift foot back for tube sock removal by LHA. Extend foot forward for tube sock replacement by LHA. Step out of the shuffle box. Repeat with other foot. LHA removes shuffle box.

Figure F-6. Aircrew decontamination stations

STATION 2 (continued)

ATTENDANTS DUST HANDS

- LHA ATTENDANT: Tighten hood adjustment straps.

DUST HANDS

- CREW MEMBER: Face LHA.
- LHA ATTENDANT: Release and stow chinstrap and communications connection.

DUST HANDS

- LHA ATTENDANT: Remove tube socks from crew member's hands.

DUST HANDS

- Vapor hazard area (VHA) ATTENDANT: Place new tube socks on crew member's hands.

DUST HANDS

- CREW MEMBER: Grasp aircrew eye and respiratory protection (AERP) mask with hand closest to rack.

STATION 2A

- LHA ATTENDANT: Disconnect bayonets and snaps.

DUST HANDS

- CREW MEMBER: Face decontamination rack and lean head toward LHA.
- LHA ATTENDANT: Remove helmet and stow.

DUST HANDS

- LHA ATTENDANT: CAMS crew member.
- VHA ATTENDANT: Brief crew member on mask removal. (Tell crew member to turn 1/8 toward VHA.)
- LHA ATTENDANT: Loosen hood adjustment straps.

DUST HANDS

- LHA ATTENDANT: Before removing mask, take tube sock off hand that removes mask and place hand on stomach.
- LHA ATTENDANT: Raise hood apron off shoulders.

Note. Crew member takes several deep breaths, holds breath, and closes eyes tightly.

- CREW MEMBER: Place R/L hand under the neck dam and lift aircrew eye and respiratory protection mask off head passing over shoulder to LHA attendant. **Do not touch outside of hood**. Hands back.
- LHA ATTENDANT: Discard mask and tube socks.

DUST HANDS

- CREW MEMBER: Hands forward.
- VHA ATTENDANT: Guide crew member to the VHA.

STATION 3

UNDRESS AREA

- CREW MEMBER: Remove any remaining clothing.
- CREW MEMBER: Redress and proceed to collection point and contact ground mission commander.

EXPEDIENT UNDRESS

- CREW MEMBER: Remove AERP and flight equipment as required. Redress. Proceed to collection point and contact ground mission commander.

Figure F-6. Aircrew decontamination stations (continued)

This page intentionally left blank.

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

AC	hydrogen cyanide
AERP	aircrew eye and respiratory protection
AF	Air Force
AFRRI	Armed Forces Radiobiology Research Institute
AO	area of operation
AOR	area of responsibility
APR	air purifying respirator
ARNG	Army National Guard
ARSOF	Army special operations forces
AUIB	Aircrew Uniform Integrated Battlefield
BDO	battle dress overgarment
BIDS	biological integrated detection system
BVO	black vinyl overboot
BW	biological warfare
C2	command and control
CA	Civil Affairs
CAM	chemical agent monitor
CAO	Civil Affairs operations
CB	chemical or biological
CBR	chemical, biological, and radiological
CBRN	chemical, biological, radiological, and nuclear
CCDR	combatant commander
CCE	civilian chemical equipment
CCIR	commander's critical information requirement
CCL	contamination control line
CCP	casualty collection point
CDA	chemical detachment A
CDD	chemical decontamination detachment
CDE	chemical defense equipment
CDM	chemical downwind message
CJSOTF	combined joint special operations task force
CM	consequence management
CMO	civil-military operations
CNR	Center for National Response
COA	course of action
COLIWASA	composite liquid waste sampler

CONUS	continental United States
COTS	commercial off-the-shelf
CP	counterproliferation
CPFC	chemical protective footwear cover
CPOG	chemical protective overgarment
CPU	chemical protective undergarment
CRD	chemical reconnaissance detachment
CRDEC	Chemical Research, Development, and Engineering Center
CT	counterterrorism
CW	chemical warfare
CWA	chemical warfare agent
DA	direct action
DAD	detailed aircraft decontamination
DNWS	Defense Nuclear Weapons School
DOD	Department of Defense
DPG	Dugway Proving Ground
DRT	decontamination and reconnaissance team
DS2	decontamination solution 2
DTD	detailed troop decontamination
DTRA	Defense Threat Reduction Agency
ECBC	Edgewood Chemical Biological Center
EMP	electromagnetic pulse
EMT	emergency medical treatment
EO	Executive Order
EOC	emergency operations center
EOD	explosive ordnance disposal
EPA	Environmental Protection Agency
EPDS	expedient personnel decontamination system
EPW	enemy prisoner of war
ERG	Emergency Response Guide
F	Farenheit
FARP	forward arming and refueling point
FBI	Federal Bureau of Investigation
FID	foreign internal defense
FM	field manual
FP	force protection
FRAGORD	fragmentary order
FRIES	fast-rope insertion and extraction system
GB	Sarin
GCC	geographic combatant commander
GD	Soman

gpm	gallons per minute
GRR	ground radiological reconnaissance
GSB	group support battalion
GSC	group support company
GVO	green vinyl overboot
GZ	ground zero
ha	hectares
HAZMAT	hazardous materials
HD	mustard agent
HEPA	high-efficiency particulate air
HMMWV	high mobility multipurpose wheeled vehicle
HN	host nation
HNS	host-nation support
HQ	headquarters
HTH	calcium hypochlorite
IAW	in accordance with
IBADS	interim biological agent detection system
ICAD	individual chemical agent detector
ICAM	improved chemical agent monitor
IO	information operations
IPE	individual protective equipment
IPL	integrated priority list
IPOE	intelligence preparation of the operational environment
JBPDS	joint biological point detection system
JCAD	joint chemical agent detector
JFC	joint force commander
JP	joint publication
JSLCBRNRS	joint Service light CBRN reconnaissance system
JSLIST	joint Services lightweight suit
JSLSCAD	joint Service lightweight standoff chemical agent detector
JSOTF	joint special operations task force
JTF	joint task force
JWARN	Joint Warning and Reporting System
km	kilometer
kmph	kilometers per hour
LD	lethal dose
LDS	lightweight decontamination system
LHA	liquid hazard area
LNO	liasion officer
LPU	life preserver unit
LR–BSDS	Long-Range–Biological Standoff Detection System

LSD	lysergic acid diethylamide
MDS	Modular Decontamination System
METOC	meteorological and oceanographic
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, civil considerations
MICAD	multipurpose integrated chemical agent detector
MOPP	mission-oriented protective posture
mph	miles per hour
NATO	North Atlantic Treaty Organization
NAVSOF	Navy Special Operations Forces
NBC	nuclear, biological, and chemical
NBCCC	nuclear, biological, and chemical collection center
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NEO	noncombatant evacuation operation
NFPA	National Fire Protection Association
NGO	nongovernmental organization
NIOSH	National Institute for Occupational Safety and Health
NRC	National Response Center
NVG	night vision goggle
OPLAN	operation plan
ORP	objective rally point
OSHA	Occupational Safety and Health Administration
PA	public affairs
PAPR	powered air-purifying respirator
PCISE	plan, coordinate, integrate, synchronize, and execute
PPE	personnel protective equipment
PSYOP	Psychological Operations
RA	radiological agent
RCA	riot control agent
R-CBATEB	Radiological, Chemical, and Biological Analysis and Technical Evaluation Board
R-CBSCE	radiological-chemical and biological sampling control element
RGR	Ranger
ROE	rules of engagement
RV	radius of vulnerability
SB(SO)(A)	Sustainment Brigade (Special Operations) (Airborne)
SCPE	simplified collective protective equipment
SCUBA	self-contained underwater breathing apparatus
SDK	skin decontamination kit
SDS	sorbent decontamination system

SF	Special Forces
SFG(A)	Special Forces group (airborne)
SFODA	Special Forces operational detachment A
SME	subject matter expert
SO	special operations
SOA	special operations aviation
SOAR(A)	special operations aviation regiment (airborne)
SOF	special operations forces
SOP	standing operating procedure
SOTF	special operations task force
SR	special reconnaissance
SSE	sensitive site exploitation
STB	super tropical bleach
STP	sample transfer point
SUPCOM	support command
TEU	technical escort unit
TIC	toxic industrial chemical
TIM	toxic industrial material
TSOC	theater special operations command
TTP	tactics, techniques, and procedures
USAJFKSWCS	United States Army John F. Kennedy Special Warfare Center and School
USAMRICD	United States Army Medical Research Institute for Chemical Defense
USAMRIID	United States Army Medical Research Institute of Infectious Diseases
USAR	United States Army Reserve
USASOC	United States Army Special Operations Command
USCG	United States Coast Guard
USG	United States Government
USSOCOM	United States Special Operations Command
UW	unconventional warfare
VA	vulnerability analysis
VHA	vapor hazard area
VX	ethyl-S-dimethylaminoethyl methylphosphonothiolate
WARNORD	warning order
WMD	weapons of mass destruction

SECTION II – TERMS

aerosol

A liquid or solid composed of finely divided particles suspended in a gaseous medium. Examples of common aerosols are mist, fog, and smoke. (JP 1-02)

agent

See biological or chemical agent. (This term and its definition are applicable only in the context of this publication and cannot be referenced outside this publication.)

antiterrorism

Defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include limited response and containment by local military and civilian forces. (JP 1-02)

avoidance

Individual and/or unit measures taken to avoid or minimize chemical, biological, radiological, and nuclear (CBRN) attacks and reduce the effects of CBRN hazards. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of JP 1-02.)

biological agent

A microorganism that causes disease in personnel, plants, or animals, or causes the deterioration of materiel. (JP 1-02)

biological defense

The methods, plans, and procedures involved in establishing and executing defensive measures against attacks using biological agents. (JP 1-02)

biological environment

Conditions found in an area resulting from direct or persisting effects of biological weapons. (JP 1-02)

biological threat

A threat that consists of biological material planned to be deployed to produce casualties in personnel or animals or damage plants. (JP 1-02)

biological weapon

An item of materiel which projects, disperses, or disseminates a biological agent including arthropod vectors. (JP 1-02)

blister agent

A chemical agent which injures the eyes and lungs, and burns or blisters the skin. Also called vesicant agent. (JP 1-02)

blood agent

A chemical compound, including the cyanide group, that affects bodily functions by preventing the normal utilization of oxygen by body tissues. (JP 1-02)

chemical agent

Any toxic chemical intended for use in military operations. (JP 1-02)

chemical, biological, radiological, and nuclear defense

Defensive measures that enable friendly forces to survive, fight, and win against enemy use of chemical, biological, radiological, and nuclear (CBRN) weapons and agents. U.S. forces apply CBRN defensive measures before and during integrated warfare. In integrated warfare, opposing forces employ nonconventional weapons along with conventional weapons (CBRN weapons are nonconventional). (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of JP 1-02.)

chemical, biological, radiological, and nuclear environment

Environments in which there is deliberate or accidental employment, or threat of employment, of chemical, biological, radiological, and nuclear weapons; deliberate or accidental attacks or contamination with toxic industrial materials, including toxic industrial chemicals; or deliberate or accidental attacks or contamination with radiological (radioactive) materials. (This term and its definition are approved for inclusion in the next edition of JP 1-02.)

chemical contamination

See contamination. (JP 1-02)

chemical defense

The methods, plans, and procedures involved in establishing and executing defensive measures against attack utilizing chemical agents. See also CBRN defense. (JP 1-02)

chemical environment

Conditions found in an area resulting from direct or persisting effects of chemical weapons. (JP 1-02)

chemical operation

Employment of chemical agents to kill, injure, or incapacitate for a significant period of time, man or animals, and deny or hinder the use of areas, facilities, or material; or defense against such employment. (JP 1-02)

chemical warfare

All aspects of military operations involving the employment of lethal and incapacitating munitions/ agents and the warning and protective measures associated with such offensive operations. Since riot control agents and herbicides are not considered to be chemical warfare agents, those two items will be referred to separately or under the broader term "chemical," which will be used to include all types of chemical munitions/agents collectively. Also called CW. (JP 1-02)

chemical weapon

Together or separately, (a) a toxic chemical and its precursors, except when intended for a purpose not prohibited under the Chemical Weapons Convention; (b) a munition or device specifically designed to cause death or other harm through toxic properties of those chemicals specified in (a) above, which would be released as a result of the employment of such munition or device; (c) any equipment specifically designed for use directly in connection with the employment of munitions or devices specified in (b) above. (JP 1-02)

Chemical Weapons Convention (CWC)

The CWC, which entered into force for states parties on 26 April 1997, bans the acquisition, development, production, transfer, and use of chemical weapons. It prohibits the use of riot control agents as a method of warfare. It provides for the destruction of all chemical weapons stocks and production facilities within 10 years after entry into force. It contains a vigorous challenge regime to ensure compliance. The United States ratified the CWC on 25 April 1997.

coalition

An ad hoc arrangement between two or more nations for common action. (JP 1-02)

combatant command

A unified or specified command with a broad continuing mission under a single commander established and so designated by the President, through the Secretary of Defense and with the advice and assistance of the Chairman of the Joint Chiefs of Staff. Combatant commands typically have geographic or functional responsibilities. (JP 1-02)

contaminate

See contamination. (JP 1-02)

contaminated remains

Remains of personnel which have absorbed or upon which have been deposited radioactive material, or biological or chemical agents. (JP 1-02)

contamination

1. The deposit, absorption, or adsorption of radioactive material, or of biological or chemical agents on or by structures, areas, personnel, or objects. 2. (DOD only) Food and/or water made unfit for consumption by humans or animals because of the presence of environmental chemicals, radioactive elements, bacteria or organisms, the byproduct of the growth of bacteria or organisms, the decomposing material (to include the food substance itself), or waste in the food or water. (JP 1-02)

contamination control

Procedures to avoid, reduce, remove, or render harmless (temporarily or permanently) nuclear, radiological, biological, and chemical contamination for the purpose of maintaining or enhancing the efficient conduct of military operations. (JP 1-02)

decontamination

The process of making any person, object, or area safe by absorbing, destroying, neutralizing, making harmless, or removing chemical or biological agents, or by removing radioactive material clinging to or around it. (JP 1-02)

deliberate planning

A planning process for the deployment and employment of apportioned forces and resources that occurs in response to a hypothetical situation. Deliberate planners rely heavily on assumptions regarding the circumstances that will exist when the plan is executed. (FM 1-02)

detection

In chemical, biological, radiological, and nuclear (CBRN) environments, the act of locating CBRN hazards by use of CBRN detectors or monitoring and/or survey teams. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of JP 1-02.)

dirty

Chemical, biological, radiological, and nuclear defense (CBRN) contaminated.

dispersion

1. A scattered pattern of hits around the mean point of impact of bombs and projectiles dropped or fired under identical conditions; 2. In antiaircraft gunnery, the scattering of shots in range and deflection about the mean point of explosion; 3. The spreading or separating of troops, materiel, establishments, or activities which are usually concentrated in limited areas to reduce vulnerability; 4. In chemical and biological operations, the dissemination of agents in liquid or aerosol form. (JP 1-02)

electromagnetic pulse

The electromagnetic radiation from a strong electronic pulse, most commonly caused by a nuclear explosion that may couple with electrical or electronic systems to produce damaging current and voltage surges. Also called EMP. (JP 3-13.1)

Executive Order 11850

The Executive Order dated 8 April 1975, *Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents*, that renounced the first use of herbicides in war (except for specified defensive uses) and the first use of riot control agents (RCAs) in war except for defensive military modes to save lives.

ground zero

The point on the surface of the earth at, or vertically below or above, the center of a planned or actual nuclear detonation. (JP 1-02)

hot spot

Region in a contaminated area in which the level of radioactive contamination is considerably greater than in neighboring regions in the area. (JP 1-02)

immediate decontamination

Decontamination carried out by individuals immediately upon becoming contaminated. It is performed in an effort to minimize casualties, save lives, and limit the spread of contamination. Also called emergency decontamination. (JP 1-02)

individual protection

Actions taken by individuals to survive and continue the mission under chemical, biological, radiological, and nuclear conditions. (This term and its definition are approved for inclusion in the next edition of JP 1-02.)

individual protective equipment

In nuclear, biological, and chemical warfare, the personal clothing and equipment required to protect an individual from biological and chemical hazards and some nuclear effects. (JP 1-02)

industrial chemicals

Chemicals developed or manufactured for use in industrial operations or research by industry, government, or academia. These chemicals are not primarily manufactured for the specific purpose of producing human casualties or rendering equipment, facilities, or areas dangerous for human use. Hydrogen cyanide, cyanogen chloride, phosgene, and chloropicrin are industrial chemicals that also can be military chemical agents. (JP 1-02)

joint force special operations component commander

The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of special operations forces and assets, planning and coordinating special operations, or accomplishing such operational missions as may be assigned. The joint force special operations component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. The joint force special operations component commander will normally be the commander with the preponderance of special operations forces and the requisite command and control capabilities. Also called JFSOCC. (JP 1-02)

joint special operations task force

A joint task force composed of special operations units from more than one Service, formed to carry out a specific special operation or prosecute special operations in support of a theater campaign or other operations. The joint special operations task force may have conventional non-special operation units assigned or attached to support the conduct of specific missions. Also called JSOTF. (JP 1-02)

mission-oriented protective posture

A flexible system of protection against nuclear, biological, and chemical contamination. This posture requires personnel to wear only that protective clothing and equipment (mission-oriented protective posture gear) appropriate to the threat level, work rate imposed by the mission, temperature, and humidity. Also called MOPP. (JP 1-02)

mission-oriented protective posture gear

Military term for individual protective equipment, including suit, boots, gloves, mask with hood, first-aid treatments, and decontamination kits issued to Soldiers. Also called MOPP gear. (JP 1-02)

Mylar

A trademark used for a thin strong polyester material.

nerve agent

A potentially lethal chemical agent which interferes with the transmission of nerve impulses. (JP 1-02)

nonpersistent agent

A chemical agent that when released dissipates and/or loses its ability to cause casualties after 10 to 15 minutes. (JP 1-02)

nuclear defense

The methods, plans, and procedures involved in establishing and exercising defensive measures against the effects of an attack by nuclear weapons or radiological warfare agents. It encompasses both the training for, and the implementation of, these methods, plans, and procedures. See also CBRN defense. (JP 1-02)

off-gassing

Vapor release of biological or chemical agents.

pathogen

A disease-producing microorganism. (JP 1-02)

persistency

In biological or chemical warfare, the characteristic of an agent which pertains to the duration of its effectiveness under determined conditions after its dispersal. (JP 1-02)

persistent agent

A chemical agent that, when released, remains able to cause casualties for more than 24 hours to several days or weeks. (JP 1-02)

protection

Measures that are taken to keep chemical, biological, radiological, and nuclear hazards from having an adverse effect on personnel, equipment, or critical assets and facilities. Protection consists of five groups of activities: hardening of positions; protecting personnel; assuming mission-oriented protective posture; using physical defense measures; and reacting to attack. (This term and its definition are approved for inclusion in the next edition of JP 1-02.)

protective mask

A protective ensemble designed to protect the wearer's face and eyes, and prevent the breathing of air contaminated with chemical and/or biological agents. (JP 1-02)

radionuclide

A nuclide (type of atom specified by its atomic number, atomic mass, and energy state, such as carbon 14) that exhibits radioactivity.

riot control agent

Any chemical that is not listed in the Chemical Weapons Convention, which can produce rapidly in humans sensory irritate or disabling physical effects which disappear within a short time following termination of exposure. (JP 1-02)

special operations command

A subordinate unified or other joint command established by a joint force commander to plan, coordinate, conduct, and support joint special operations within the joint force commander's assigned operational area. Also called SOC. (JP 1-02)

sterilize

To remove from material to be used in covert and clandestine operations, marks or devices which can identify it as emanating from the sponsoring nation or organization. (JP 1-02)

survey

The directed effort to determine the location and the nature of a chemical, biological, and radiological hazard in an area. (JP 1-02)

toxic chemical

Any chemical which, through its chemical action on life processes, can cause death, temporary incapacitation, or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions, or elsewhere. (JP 1-02)

toxin agent

A poison formed as a specific secretion product in the metabolism of a vegetable or animal organism as distinguished from inorganic poisons. Such poisons can also be manufactured by synthetic processes. (JP 1-02)

weapons of mass destruction

Weapons that are capable of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can be high explosives or nuclear, biological, chemical, and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon. Also called WMD. (JP 1-02)

References

SOURCES USED

These are the sources quoted or paraphrased in this publication.

DA Form 1791-6-R, (Chemical/Biological Specimen Documentation)

DD Form 1911, (Material Courier Receipt)

Executive Order 11850, *Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents,* 8 April 1975

FM 3-05, *Army Special Operations Forces,* 20 September 2006

FM 3-05.20, *(C) Special Forces Operations (U),* 10 October 2006

FM 3-05.30, *Psychological Operations,* 15 April 2005

FM 3-05.40, *Civil Affairs Operations*, 29 September 2006

FM 3-05.201, *Special Forces Unconventional Warfare Operations*, 30 April 2003

FM 3-05.204, *(C) Special Forces Special Reconnaissance Tactics, Techniques, and Procedures (U),* 10 October 2006

FM 3-6, *Field Behavior of NBC Agents (Including Smoke and Incendiaries),* 3 November 1986

FM 3-61.1, *Public Affairs Tactics, Techniques, and Procedures,* 1 October 2000

FM 3-11.3, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance,* 2 February 2006

FM 3-11.4, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection,* 2 June 2003

FM 3-11.5, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination*, 4 April 2006

FM 3-11.14, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Vulnerability Assessment*, 28 December 2004

FM 3-18, *Special NBC Reconnaissance (LB Team),* 7 May 1993

FM 3-11.19, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance*, 30 July 2004

FM 3-11.86, *Multiservice Tactics, Techniques, and Procedures for Biological Surveillance,* 4 October 2004

JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001

JP 3-0, *Joint Operations*, 17 September 2006

JP 3-05, *Doctrine for Joint Special Operations*, 17 December 2003

JP 3-07.1, *Joint Tactics, Techniques, and Procedures for Foreign Internal Defense (FID),* 30 April 2004

JP 3-11, *Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments,* 11 July 2000

TC 3-10, *Commander's Tactical NBC Handbook*, 29 September 1994

TM 3-4230-204-12&P, *Operator's and Unit Maintenance Manual (Including Repair Parts and Special Tools List) for Decontaminating Apparatus, Portable, DS2, 1 1/2 Quart, ABC-M11 (NSN 4230-00-720-1618)*, 31 October 1986

TM 3-4230-214-12&P, *Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools List for Decontaminating Apparatus: Portable, 14 Liter, M13 (NSN 4230-01-133-4124) and Decontaminating Apparatus: Portable, 14 Liter, M13 (Practice) (4230-01-345-5172),* 15 August 1992

TM 3-4230-216-10, *Operator's Manual for Decontaminating Kit, Skin: M258A1 (NSN 4230-01-101-3984) and Training Aid, Skin Decontaminating: M58A1 (6910-01-101-1768)*, 17 May 1985

TM 3-4230-228-10, *Operator's Manual for Decontaminating Apparatus: Power-Driven, Lightweight, M17 (NSN 4230-01-251-8702)*, 15 May 1989

TM 3-4230-229-10, *Operator's Manual for Decontaminating Kit, Skin: M291, (NSN 4230-01-251-8702)*, 2 October 1989

TM 3-4240-280-10. *Operator's Manual for Mask, Chemical-Biological: Aircraft, ABC-M24 and Accessories and Mask, Chemical-Biological, Tank, M25A1 and Accessories*, 15 March 1988

TM 3-4240-341-10. *Operator Instructions for Mask, Chemical-Biological: M45 (NSN 4240-01-414-4034)–Extra Small (EIC 123); (4240-01-414-4035)–Small (EIC 123); (4240-01-414-4051)–Medium (EIC 123); (4240-01-414-4052)–Large (EIC 123)*, 20 May 1998

TM 3-4240-342-10, *Operator's Manual for Mask, Chemical-Biological, Aircraft: Apache Aviator, M48 (NSN 4240-01-386-0198)–Small (4240-01-386-4686)–Medium (4240-01-386-0201)–Large (4240-01-386-0207)–Extra Large*, 13 September 2002

TM 3-4240-342-20&P, *Unit Maintenance Manual Including Repair Parts and Special Tools List for Mask, Chemical-Biological: Aircraft, Apache Aviator, M48 (NSN 4240-01-386-0198)–Small (4240-01-386-4686)–Medium (4240-01-386-0201)–Large (4240-01-386-0207)–Extra Large* 13 September 2002

TM 3-6665-307-10, *Operator's Manual for Chemical Agent Detector Kit, M256 (NSN 6665-01-016-8399) and M256A (NSN 6665-01-133-4964)*, 1 September 1985

TM 3-6665-312-12&P, *Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List for M8A1 Automatic Chemical Agent Alarm (NSN 6665-01-105-5623) and Auxiliary Equipment M10 Power Supply (6665-00-859-2225); M10A1 Power Supply (6665-00-093-2739); M228 High Profile Mounting Kit (6665-00-859-2212); and M182 Low Profile Mounting Kit (6665-00-110-9492)*, 17 March 1985

TM 3-6665-319-10, *Operator's Manual for Water Testing Kit, Chemical Agents: M272 (NSN 6665-01-134-0885)*, 30 November 1983

TM 3-6665-349-12&P, *Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools List for Alarm, Biological Agent, Automatic: Integrated Detection System, M31 (NSN 6665-01-392-6191)*, 13 July 2001

Index

This page intentionally left blank.

FM 3-05.132
31 August 2007

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0*723901*

DISTRIBUTION:

Active Army, Army National Guard, and U. S. Army Reserve: To be distributed in accordance with the initial distribution number 115859, requirements for FM 3-05.132.

PIN: 084325-000