FM 3-05.132

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

November 2009

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Headquarters, Department of the Army

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Field Manual
No. 3-05.132

Headquarters
Department of the Army
Washington, DC, 30 November 2009

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Contents

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*This publication supersedes FM 3-05.132, 31 August 2007.

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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 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), and ARSOF sensitive site exploitation (SSE), and discusses 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 described herein.

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 (ARNGUS), 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 on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly 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 illustrates how ARSOF CBRN units and capabilities support the National Military Strategy for combating weapons of mass destruction (NMS-CWMD). It serves to familiarize conventional staffs with the dynamics of SOF operational support. It describes tactics, techniques, and procedures (TTP), and capabilities tailored to the CBRN dimension in special operations (SO) missions and activities.

ARSOF CBRN MISSION

1-1. The United States Special Operations Command (USSOCOM) is responsible for synchronizing planning for global operations against terrorist networks, which it does in coordination with other combatant commands, the Services, and, as directed, appropriate United States (U.S.) government agencies. As directed, USSOCOM executes global operations against terrorist networks. As a subordinate unit, the USASOC has an important role in CWMD operations and recognizes that the probability of operating in a CBRN environment exists; therefore, ARSOF must specifically organize, train, and equip to be successful in a CBRN mission. The term CBRN environment includes the deliberate, accidental employment, or threat of CBRN weapons and attacks with CBRN or toxic industrial materials (TIMs). ARSOF CBRN forces provide CBRN reconnaissance, surveillance, and exploitation support for SOF in support of strategic, operational, and tactical objectives in all environments (permissive, uncertain, and hostile) to support the geographic and functional combatant commanders' (CCDRs') intent and objectives. This section defines the relationships between ARSOF core tasks and the military mission areas identified in the NMS-CWMD and describes how ARSOF CBRN units support the execution of the ARSOF core tasks across the spectrum of combating weapons of mass destruction (CWMD) operations (Figure 1-1, page 1-2). Joint Publication (JP) 3-40, *Combating Weapons of Mass Destruction,* Chapters 1 and 4, provide a complete description of the NMS-CWMD.

PASSIVE DEFENSE

1-2. ARSOF units are capable of providing a wide range of specialized support to CWMD operations but are generally not resourced to conduct large-scale CWMD operations. As such, the CBRN capabilities within ARSOF are mostly used for passive defense and to support the execution of ARSOF core tasks. CBRN capabilities are aligned with the four subtasks of CBRN passive defense: sense, shape, shield, and sustain. In addition to minimizing the vulnerability to and effects of WMD attacks, the ARSOF CBRN capabilities also minimize vulnerability to the effects of TIM accidents or events.

SENSE

1-3. CBRN "sense" is defined in JP 3-11, *Operations in a Chemical, Biological, Radiological, and Nuclear (CBRN) Environment*, as "activities that provide CBRN threat and hazard information and intelligence to support the common operational picture." ARSOF units' primary defense against CBRN contamination is to avoid becoming contaminated. Thus, the primary focus of ARSOF staff elements and the specialized ARSOF CBRN units (CRD, CDD, DRT) is to prevent the contamination of ARSOF units by providing them with the most relevant information and intelligence products. CBRN sense covers the tasks of contamination avoidance and reconnaissance/detection. Executed together, these tasks produce the initial intelligence picture of what potential threats and environmental considerations exist in the area of operations (AO). Additionally, the reconnaissance/detection capabilities of ARSOF CBRN units provide the geographic combatant commanders (GCCs) and SOF commanders with an effective, deep CBRN strategic-reconnaissance capability to detect and assess WMD in any environment.

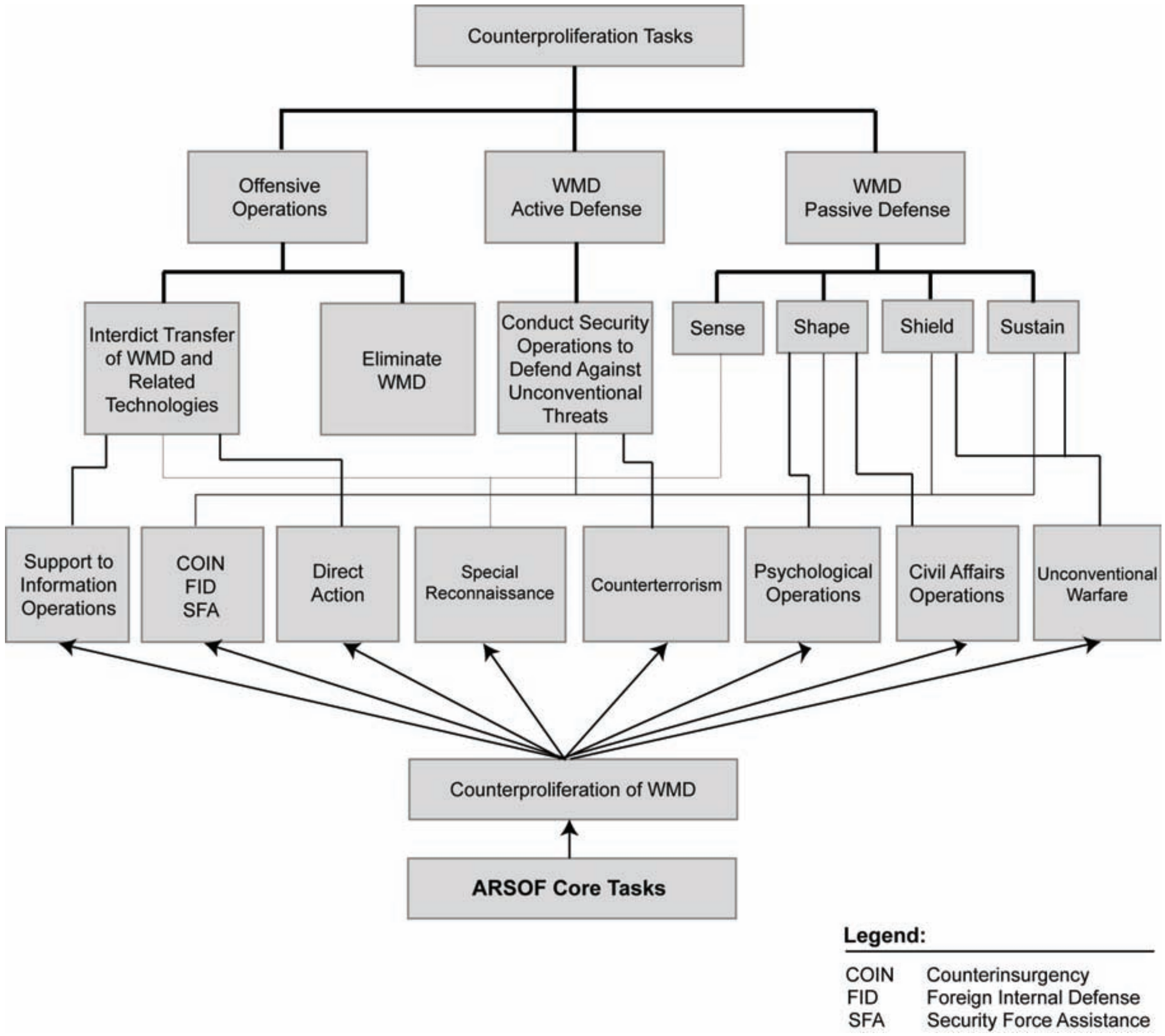

Figure 1-1. CBRN CWMD core task crosswalk

Contamination Avoidance

1-4. Reducing ARSOF vulnerability to a CBRN event (whether accidental or threat initiated) begins with the contamination avoidance process during the planning phases of an operation. Contamination avoidance begins during the intelligence preparation of the operational environment (IPOE) process. The unit CBRN officer and noncommissioned officer (NCO) examine map data, geospatial imagery products, meteorological data, and intelligence products, such as target information packets, human intelligence (HUMINT) reports, or site surveys, to determine which areas have the greatest probability for force contamination. The unit officer can then provide the commander with knowledge concerning what areas in the AO present the greatest risk of contamination to the force.

1-5. Contamination avoidance is not a static process. The CBRN officer and NCO must continually update their assessment of CBRN hazards in the AO to provide the commander with the most relevant information of the greatest potential for the force to avoid being contaminated should a CBRN event occur.

> **Example Scenario**
>
> SFODA XXXX has developed a target packet on a suspected insurgent leader with ties to heroin production. In preparation for a strike, the battalion S-2 section reviews available imagery of the site and notices a large collection of metal barrels outside of the compound. Due to the target's ties to heroin production, the battalion CBRN cell also reviews the imagery and is able to identify the barrels as potentially containing the hazardous chemicals required for refining opium into heroin.

Reconnaissance and Detection

1-6. Every company-level organization within USASOC possesses a limited capability to conduct CBRN reconnaissance and detection. The Army common equipment issued to each unit will detect the presence of most military chemical compounds and high levels of beta and gamma radiation. Still, this equipment only alerts the unit to the presence of significant levels of military chemical compounds and radiation, may show false positive readings, and maintains extremely high detection thresholds. Only the CRD, CDD, and DRT possess the specialized equipment and training to deliver a presumptive analysis of a potential CBRN substance. It is the presumptive analysis that gives the commander data of such quality that operational decisions can be made relying on this data.

1-7. The ARSOF core tasks special reconnaissance (SR) and counterproliferation of weapons of mass destruction (CPWMD) are supported by the CBRN core task sense. CRDs and DRTs provide operational support to SR and CPWMD missions.

> **Example Scenario**
>
> At 0330L, a massive explosion rocks the desert in western Iraq. The explosion is of such magnitude that seismic detectors in Baghdad recorded the event; however, no imagery assets were available to record what happened. As word spreads, there is concern that the explosion might have been a low-order nuclear detonation. SFODA XXXX is tasked with infiltrating to the vicinity of the explosion site and confirming or denying the presence of residual radiation. A 2-man element from the CRD is attached to the SFODA to provide technical assistance in determining the presence, type, and strength of radiation.

SHAPE

1-8. CBRN "shape" is defined in JP 3-11 as "the command and control (C2) activity that integrates the sense, shield, and sustain operational elements to characterize CBRN hazards and threats and employ necessary capabilities to counter their effects." Given the unique capabilities of ARSOF CBRN units, CBRN shape is broken down into two subtasks—CBRN staff functions and exploitation. CBRN shape is the most critical of the four core elements as this is the integration and fusion of CBRN-related information into the decision-making and mission-planning processes to minimize the effects of a CBRN threat or event.

Staff Functions

1-9. The ARSOF CBRN staff has a critical role in ensuring that CBRN-related information is thoroughly analyzed and developed to provide CBRN situational awareness of potential areas of vulnerability within the SOF area of responsibility (AOR). The ARSOF CBRN staff will then develop a CBRN risk assessment and vulnerability analysis in accordance with (IAW) FM 3-11.14, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Vulnerability Assessment*. To enhance situational awareness, the SOF CBRN staff establishes and maintains open lines of communication between the different staff sections; CBRN cells at higher, subordinate, and adjacent units; and the leadership of all assigned or attached CBRN units. The staff integration part of CBRN shape is used to support FID, counterterrorism (CT), PSYOP, Civil Affairs operations (CAO), and information operations (IO) ARSOF core tasks. The commonality of these tasks is that none of them have active CBRN roles; however, if the CBRN cell is not fully integrated with the other staff sections, indicators of CBRN activity or vulnerability may be missed. In addition, PSYOP, when properly planned, are a valuable capability that may be used to not only shape the operation, but mitigate possible negative effects of an adversary's use of CBRN. The following scenario further explains the importance of CBRN cells.

Example Scenario

SFODA XXXX has developed a target packet on a suspected insurgent leader with ties to heroin production. In preparation for a strike, the battalion S-2 reviews available imagery of the site and notices a large collection of metal barrels outside of the compound. Due to the target's ties to heroin production, the battalion CBRN cell also reviews the imagery and is able to identify the barrels as likely containing the hazardous chemicals required for refining opium into heroin. This information is passed to the SFODA prior to the strike. The SFODA is then able to update its protection measures in the event that the barrels are destroyed during the strike and/or an operational heroin lab is discovered, thus reducing the possibility of casualties received from inhaling any hazardous fumes released.

Exploitation

1-10. The primary ARSOF organic asset that supports special operations forces site exploitation (SOFSE) operations is the CRD. ARSOF CBRN assets support SOFSE by providing tactical situational awareness concerning the contents of the objective to the maneuver commander, packaging that information for transmittal to higher echelons, and ensuring an uninterrupted chain of custody for any items removed from the objective. This information provides intelligence assets at higher echelons high-quality data to analyze, which in turn will assist maneuver commanders in determining future mission priorities. Exploitation support is associated with direct action (DA) and CPWMD SOF core tasks. Chapter 5 outlines specific topics concerning ARSOF CBRN asset support to SOFSE. The following scenario also further explains exploitation.

Example Scenario

SFODA XXXX has developed a target packet on a suspected insurgent leader with ties to heroin production. In preparation for a strike, the battalion S-2 reviews available imagery of the site and notices a large collection of metal barrels outside of the compound. The battalion CBRN cell is able to identify the barrels as likely containing the hazardous chemicals required for refining opium into heroin. This information is passed to the SFODA prior to the strike. The SFODA is then able to update its protection measures in the event that the barrels are destroyed during the strike and/or an operational heroin lab is discovered, thus reducing the possibility of casualties received from inhaling any hazardous fumes released. Additionally, the SFODA requests a 4-man CRD team to confirm/deny the presence of drugs on the objective. At the appointed hour, the mission proceeds. The SFODA is successful in securing the compound and detaining the target. With the objective secured, the CRD team conducts a sweep of the compound. A swipe test of the target's hands shows positive for heroin, which allows the team intelligence sergeant (18F) to ask more direct questions during a tactical questioning of the target. Additionally, once the photographs, site sketches, samples, and evidence collected are sent to higher headquarters (HQ) for analysis, it is determined that the SFODA has disrupted a primary source of income for a regional insurgent network, which in turn will help shape future operations to further disrupt insurgent activity in the region.

SHIELD

1-11. CBRN "shield" is defined in JP 3-11 as "individual and collective protection measures essential to mitigating the effects of CBRN hazards." ARSOF units place the priority of effort for CBRN defense on active denial operations, counterproliferation (CP) operations, and contamination avoidance to significantly reduce the threat capability to use CBRN materials in an attack against SOF lines of effort. However, these efforts cannot be relied upon exclusively to eliminate the threat of a CBRN attack; therefore, ARSOF units maintain limited passive CBRN protection and operational protection measures. Should an ARSOF unit be forced to continue operations in a contaminated environment, the ARSOF unit will depend entirely on collocated conventional units for life support and collective protection (COLPRO) requirements. This section is subdivided into passive protection measures and operational protection measures. Passive protection measures differ from operational protection measures by accounting for naturally occurring events, such as malaria outbreaks or industrial contamination and deliberate attacks while operational protection measures are only used to protect friendly forces against a CBRN attack. All SOF core tasks are somewhat supported by CBRN shield as ARSOF will always have access to protective measures against CBRN threats wherever they go. Specifically, though, CBRN shield supports unconventional warfare (UW) and FID, especially since ARSOF units conducting these missions will be working with indigenous forces that may request protective equipment from SOF elements if their government or organization is unable to provide it. These types of requests could present a challenging problem if there is limited stockage of U.S. protective equipment in the theater.

Passive Protection Measures

1-12. ARSOF use passive protection measures to avoid CBRN contamination. The passive protection measures used are developed by the CBRN staff in conjunction with the S-3 and S-2 sections during predeployment planning. Based upon the threat capabilities, naturally occurring hazards, indigenous activities in the AO, and any other relevant concerns, the staff sections will make a recommendation to the commander on which passive protection measures to employ.

1-13. Medical surveillance of U.S. forces and indigenous populations is a critical part of a passive defense. ARSOF units, especially CA elements, excel at conducting medical surveillance of indigenous populations through the conduct of medical civic action program (MEDCAP) and veterinary civic action program (VETCAP) operations. These operations can provide early warning of a biological or radiological event. Should any unusual events or trends be identified by medical personnel, the CBRN staff along with the S-2 can aid in determining if the event was a naturally occurring event or a biological/radiological attack and advise the command on the best course of action (COA) in conjunction with the medical personnel.

Operational Protection

1-14. ARSOF units only possess COLPRO equipment at the battalion level and higher. Thus, any ARSOF personnel operating away from these locations will depend entirely on collocated conventional units for COLPRO requirements. The only operational decontamination assets organic to ARSOF units are held in the CDD, DRT, and at battalion-level or higher HQ. Appendix A provides additional information about unit and CBRN organic support.

SUSTAIN

1-15. Due to the constantly changing and highly mobile mission set performed by ARSOF, the organic capabilities to restore combat power after a CBRN attack are somewhat limited. The best defense against a CBRN attack for an ARSOF element is generally avoidance. If, however, an ARSOF element becomes contaminated either during a CBRN attack or accident, the unit's combat power must be restored as quickly as possible. To that end, the ARSOF element would implement one or all of the main tenets of CBRN "sustain," which include decontamination, resupply, medical support, and site remediation. Similar to CBRN shield, CBRN sustain supports all ARSOF core tasks in general, but only UW and FID specifically, and for the same reasons.

Decontamination

1-16. Decontamination is the process by which contamination is removed from a contaminated surface. The primary decontamination units in ARSOF are the CDDs organic to SF groups and the DRTs organic to the Ranger regiment. The primary decontamination capability that ARSOF units have is the expedient personnel decontamination system (EPDS). This capability allows ARSOF to conduct immediate and operational-level decontamination; however, SOF must be supported by conventional CBRN units for thorough decontamination.

Resupply

1-17. To reconstitute an ARSOF unit quickly, an effective resupply/refit mechanism must be in place. This function is primarily handled through existing ARSOF logistics channels. The reconstitution process begins with a thorough decontamination of equipment as soon as operationally feasible after the contaminated unit completes EPDS procedures. If thorough decontamination is not feasible, all contaminated equipment is destroyed in place to render it useless to enemy forces and to prevent the spread of contamination. Logistics channels must be able to replace major end items of equipment assigned to that contaminated unit in order to restore combat power.

Medical Support and Site Remediation

1-18. ARSOF units are not manned or equipped to provide large-scale medical support to indigenous populations or U.S. forces if a CBRN accident or attack occurs. Similarly, SOF units are not equipped to conduct contaminated site remediation operations. Both of these functions of CBRN sustain are beyond the scope of ARSOF missions and must be handled by units specifically trained and equipped to conduct those types of operations. In the absence of U.S. or coalition medical or area decontamination support, ARSOF personnel may act as advisors to host nation (HN) agencies as they conduct operations.

ACTIVE DEFENSE

1-19. The ARSOF core task DA directly supports this military mission area. ARSOF units are only capable of diverting, neutralizing, or destroying WMD or their delivery means on the ground. If the WMD are being delivered by aerial means (aircraft spray, missile, bomb, or indirect fire), ARSOF units have no organic capability to actively defend against the WMD attack.

OFFENSIVE OPERATIONS

1-20. These missions are short-duration strikes and other small-scale offensive surgical actions by SOF or SO-capable units to seize, destroy, capture, or recover a WMD threat. 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. ARSOF units perform the following:

- *WMD interdiction.* If directed, SOF can conduct or support DA, SR, CT, CP, and 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 United States Government (USG) CP objectives.
- *WMD elimination.* ARSOF units are not organized to conduct WMD elimination operations. However, the highly specialized capabilities of ARSOF CBRN units can provide unique types of support to a WMD elimination mission.

SPECTRUM OF CONFLICT

1-21. 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 GCC’s AOR. ARSOF CBRN assets provide the GCCs and SOF commanders with an effective, deep CBRN strategic-reconnaissance capability to detect and assess WMD in any environment.

1-22. 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.

1-23. 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.

1-24. 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 CPWMD.

OPERATING ENVIRONMENTS AND POTENTIAL CBRN THREATS

1-25. 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. 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

1-26. 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, ARSOF 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.

1-27. 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 prophylactic measures, including immunizations. They must also ensure that all personnel drink safe water and never assume that any local water is safe.

1-28. 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. FM 3-11.4, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection*, provides additional information.

DESERT AREAS

1-29. 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

1-30. 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.

1-31. 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 NBC Agents (Including Smoke and Incendiaries)*, provides additional information.

MOUNTAIN AREAS

1-32. 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.

1-33. 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.

1-34. 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

1-35. 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 must also 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.

1-36. 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.

1-37. 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

1-38. 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.

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. Use of both persistent and nonpersistent agents will require ARSOF to establish mission-oriented protective posture (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. FM 3-6 provides additional information.

CHEMICAL AGENTS

1-41. 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 can be classified according to their physiological effects or their military use. These types of CW agents include choking, nerve, blood, blister, and incapacitating agents. 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.

1-42. Choking, nerve, blood, and blister 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.

1-43. 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 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.

1-44. CW 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. Incapacitating agents produce temporary physiological or mental effects and personnel may not require medical treatment to recover. These types of agents may hinder the ability to carry out the mission.

1-45. 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 provides additional chemical-agent operational planning considerations.

BIOLOGICAL AGENTS

1-46. 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. Individual protective equipment (IPE) generally provides protection against a biological warfare (BW) attack. Generally, biological warfare agents (BWAs) may be classified into the following broad groups:

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

1-47. Most organisms are naturally occurring and can be found in almost any environment. Without proper hygiene and appropriate prophylactic measures, 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

1-48. 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

1-49. 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. The radiation effects of a nuclear explosion are divided into two categories: initial and residual. A nuclear detonation produces its damaging effects through four primary ways: blast, thermal radiation, ionizing radiation, and electromagnetic pulse (EMP).

Blast

1-50. 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 ground zero (GZ), and be as high as 70 mph as far as 6 miles away.

Thermal Radiation

1-51. Immediately after a detonation, weapon residues emit primary thermal radiation (X-rays) that are absorbed within a few feet of air. This energy then reemits from the fireball as thermal radiation consisting of ultraviolet, visible, and infrared rays. The following thermal pulses result from that 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.

Ionizing Radiation

1-52. The two radioactivity hazards from a nuclear detonation are ionizing radiation and fallout. Ionizing radiation (x-rays, gamma rays, and neutrons) is emitted within the first minute of the detonation. Fallout is the residual radiation product distributed in the air by a nuclear detonation.

Electromagnetic Pulse

1-53. 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

1-54. 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

1-55. Riot control agents (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, *Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents*, establishes the national policy for the use of RCAs by U.S. forces in combat.

CBRN SUPPORT AVAILABLE AT DIRECT REPORTING UNITS

1-56. Chemical personnel operate throughout USASOC. Numbers, types, and locations of chemical personnel reflect their intended missions. SF groups, 75th Ranger Regiment, 160th Special Operations

Aviation Regiment (SOAR), the 95th Civil Affairs Brigade, the 4th Psychological Operations Group, and the 528th SB(SO)(A) each have chemical staff personnel. The chemical staff serves in the 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 protection measures into the mission, and work closely with the intelligence section (S-2) to provide CBRN-related analysis of intelligence products, and the logistics section (S-4) to ensure the required stockage of CBRN defense materials are maintained. During operations, the CBRN staff provides technical reachback support as needed, and coordinates for decontamination assets and sample evacuation if needed. The chemical staff makes operational reports through the S-3 and provides other required reports as necessary.

1-57. The company chemical 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 also trains company personnel to conduct immediate decontamination and to support operational or thorough decontamination operations.

Chapter 2

Special Forces Group Chemical Detachments

Each Special Forces group (airborne) (SFG[A]) is assigned two CBRN elements, the chemical decontamination detachment and the chemical reconnaissance detachment. The primary focus of the CRD is collection and identification. The CDD primarily focuses on providing analysis support to SF SSE and augments the decontamination and mitigation capabilities of the battalion HQ companies. Both the CRD and CDD can support other SOF elements and other government agencies, as well as coalition partners, when operating in a joint, interagency, intergovernmental, and multinational (JIIM) environment.

CHEMICAL RECONNAISSANCE DETACHMENT

2-1. The CRD is the primary asset used to provide advanced reconnaissance and sample collection support in a CBRN environment or evidence collection and target exploitation support to SF SSE operations in a non-CBRN environment. The CRD can provide 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 can also provide support to other Service SOF, conventional forces, other government agencies, coalition partners, and HN organizations.

MANNING

2-2. The CRD currently consists of a 14-man detachment. The addition of the fourth SF battalion to an SFG(A) will increase the CRD by four. Figure 2-1 shows the current organization and manning of a CRD. 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) consist of four chemical operations NCOs of various ranks. The addition of a fourth SF battalion will increase detachment size to four CDAs. Having these NCOs per CDA allows the detachments to conduct split-team operations when the situation does not warrant a full team. Due to the highly specialized nature of the CRD mission, and the time required to develop proficiency at these tasks, every effort should be made to stabilize the personnel assigned to a CRD for a minimum of two years. Additionally, whenever feasible, CBRN personnel new to an SFG(A) should not be directly assigned to a CRD since CRDs require personnel to be airborne-qualified, as well as able to volunteer for Ranger school. Instead, CBRN personnel new to ARSOF should be assigned to a CDD or CBRN staff position.

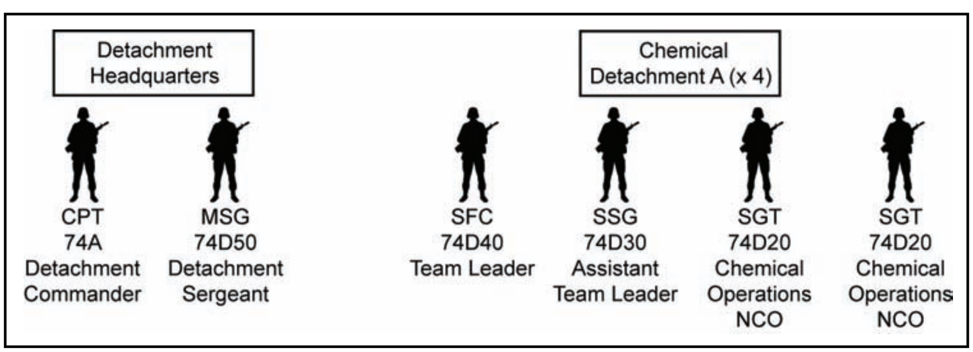

Figure 2-1. Chemical reconnaissance detachment organization and manning

COMMAND RELATIONSHIPS

2-3. Each CRD is assigned to an SFG(A). While deployed, CDAs are best used at the advanced operational base level and below. Additionally, during premission training, an SF battalion may request that a CDA be attached to them for the deployment. The group commander is the approval authority for task-organization requests. If the request is approved, the CDA will report to the battalion S-3 and integrate into the battalion premission training plan. Upon deployment, the CDA may be further task-organized down to company or detachment level for specific missions. The attachment orders remain in effect until the CDA returns to the continental United States (CONUS) and completes recovery of equipment and personnel, at which time the CDA will be reattached to the group support company.

CAPABILITIES

2-4. The CRD is a highly versatile organization that provides support for not only within the group but also for organizations outside of the SFG(A). To provide effective mission support, the CRD must possess numerous capabilities and resources. CRD personnel must maintain proficiency in individual, collective, and common SOF tasks. These tasks are vitally important to facilitate integration with maneuver units and to increase the battlefield survivability of the CDA. Each CDA must be able to—

- *Detect and identify WMD agents.* Detachment members must immediately detect and identify low-level vapor concentrations of military chemical and biological agents. Additionally, the CDA must conduct a confirmatory analysis of a solid or liquid sample on site and communicate the results back to the maneuver commander in near-real time. At the time of writing, this capability exists for military chemical agents but is limited to liquid sample analysis for biological agents. As new equipment is developed, the accuracy, efficiency, and flexibility of this task will continue to grow.
- *Detect and identify radioactive sources.* Team members must detect low levels of alpha, beta, gamma, and neutron radiation; determine distance to source; identify the isotope producing the radiation; and communicate the results to the maneuver commander in near-real time.
- *Identify toxic industrial chemicals (TICs) and toxic industrial biologicals (TIBs).* All detachment members must identify samples of unknown solids, liquids, or vapors on-site and in near-real time. At this time, the capability only exists to detect the presence of and presumptively identify TIBs. Confirmatory identification requires the resources of a medical laboratory.
- *Identify explosive compounds and gunshot residue (GSR).* Team members must identify explosive compounds from swipe tests of explosive storage areas, bomb fragments, skin, and clothing. Additionally, each CDA must detect and identify explosive vapor signatures. The detachment must conduct GSR testing on individuals identified by the maneuver commander. The CDA has a redundant capacity to identify explosive compounds and GSR. This redundancy allows the detachment to split into two-man teams and still perform this task.
- *Collect samples.* Each detachment must collect solid, liquid, wipe, air, vegetation, radiological, water, sludge, biomedical, bioassay, and tissue samples. Whenever possible, three samples of each material of interest are collected to provide the laboratory with the capability to conduct a representative and statistical analysis. Personnel must also collect control samples, which can be soil, air, water, or vegetation near the contaminated area, but are not contaminated themselves.
- *Characterize the site.* The detachment must provide the maneuver commander and intelligence personnel a detailed description of the objective using audio and visual means. This process begins with available imagery of the site. Upon entering the objective, CDA personnel make a detailed diagram of the objective (to scale when possible) and identify on the diagram where samples or evidence were collected from and the location of the photographer when samples or evidence site pictures were taken. At the sample locations, the CDA photographer takes pictures of the sample collection site and the sample. During postmission activities, the CDA leader will verify the completeness and accuracy of the site diagram, label photographs with sample numbers, and attach them.
- *Analyze and report findings.* A critical part of any CRD operation is interpreting the results provided by the equipment and providing an initial analysis to the maneuver commander. This

part is accomplished by having access to multiple chemical databases (National Institute for Occupational Safety and Health [NIOSH], Emergency Response Guide [ERG]) on site and the ability to have near-real time access to higher-level technical resources. The CDA leader provides the maneuver commander with an initial analysis within 1 hour of completing the mission, and a detailed analysis within 72 hours. The initial analysis informs the commander of any hazards associated with the samples taken, as well as any safety precautions necessary to protect the force. The detailed analysis provides an estimate of the potential uses for the substances found and identified.

- *Maintain chain of custody.* The detachment must establish and maintain chain of custody of samples and evidence collected on an objective until the sample or evidence is properly transferred to an authorized agency. The specific chain-of-custody procedures used will vary depending on the theater of operations and the level of scrutiny the samples or evidence is likely to come under. Chain-of-custody procedures can range from internal accountability of a sample to procedures required to allow evidence to be used in a HN court proceeding.
- *Operate in confined spaces.* The CRD can conduct sampling operations in confined spaces. Examples of confined spaces include ammunition bunkers, small rooms or basements, sewer systems, caves, and holes. Confined spaces may be either low in oxygen or contain extremely high concentrations of chemical vapor. If this is true, the M45 protective mask does not provide adequate respiratory protection. The detachment can measure both oxygen content and determine concentration of chemical vapors. Personnel must check these amounts using an M40A1/M53 mask before entering any confined space. If these conditions are either confirmed or suspected, detachment personnel use a self-contained breathing apparatus (SCBA) in conjunction with the M40A1/M53 protective mask. This system provides a minimum (depending on type) of 1 hour of respiratory protection (supplied air).
- *Determine personal protective equipment needs.* Detachment personnel must analyze the intelligence data available and determine what level of personal protective equipment (PPE) is required for the mission (Appendix B). The CDA can operate in PPE levels up to and including Level B. Level B PPE is equipment that has a positive pressure, full face piece SCBA with Joint Service Lightweight Integrated Suit Technology (JSLIST) and two-way communications.
- *Operate expedient personnel decontamination system.* CDA personnel must set up, operate, and close down the EPDS to decontaminate themselves and any other personnel that have become contaminated on the objective. Should further decontamination be required, the CDA leader will assist the maneuver commander in coordinating for additional decontamination assets.

CHEMICAL DECONTAMINATION DETACHMENT

2-5. The CDD primarily operates the Exploitation Analysis Center (EAC), which is organic to its parent SFG(A). It can augment the decontamination capabilities of the SF battalions if required, to include the planning and preparation for conducting operational and SOF-specific decontamination missions. The CDD also assists in CBRN operations planning, and limited CBRN reconnaissance to support contamination avoidance.

MANNING

2-6. The CDD is currently organized as a 10-man detachment. The addition of the fourth SF battalion to a SFG(A) will increase the CDD by two. Figure 2-2, page 2-4, shows the current organization and manning of a CDD. The CDD commander is a captain and the detachment sergeant is a sergeant first class. The detachment HQ consists of the commander, a sergeant, a computer plotter NCO, and a CBRN NCO. Currently, there are three chemical decontamination teams (CDTs), each having one CBRN NCO and one CBRN specialist. The addition of a fourth SF battalion will increase the CDD to four CDTs.

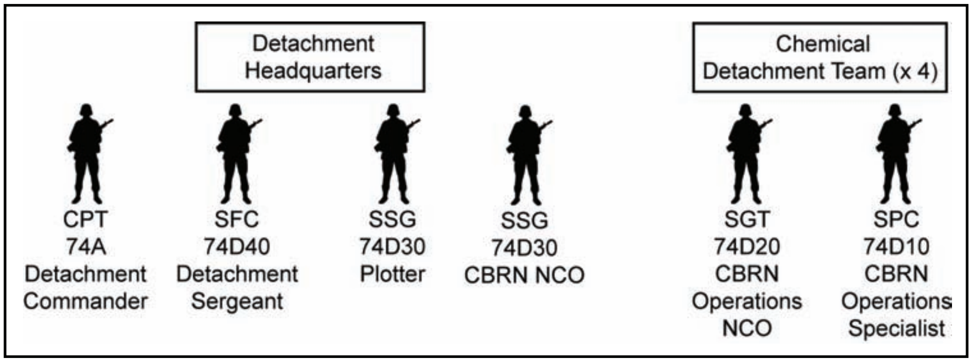

Figure 2-2. Chemical decontamination detachment organization and manning

COMMAND RELATIONSHIPS

2-7. The CDD is assigned to the group support company of the group support battalion. Upon deployment notification, the group chemical staff exercises operational control of the detachment and recommends task-organization to support the group's mission.

CAPABILITIES

2-8. The primary functions of the CDD are exploitation analysis and decontamination. The CDD provides support to the parent special operations task force (SOTF), and has limited capabilities to operate in support of other units. The CDD has the following capabilities:

- *Exploitation analysis support.* The CDD must be able to establish, staff, and operate the SOTF EAC in support of SF SSE operations. The detachment commander is the facility director and the detachment sergeant is the facility noncommissioned officer in charge (NCOIC). The staffing requirements of the EAC will change depending on the theater and types of operations being conducted. Specific capabilities of the EAC are addressed in Chapter 5.
- *Operational decontamination.* The CDD can augment the decontamination capabilities of the HQ company assigned to the SF battalion and can assist with planning and conduct of operational decontamination of SOTF units. Should a SOTF unit become contaminated to a degree that is beyond the capabilities of the company, the CDD will move to a suitable location as close to the contaminated unit as possible, and conduct MOPP gear exchange and vehicle washdown operations as required. This level of decontamination will **NOT** allow the contaminated unit to operate in reduced levels of MOPP.
- *Expedient personnel decontamination system.* The CDD must be able to set up, operate, and close down the EPDS to decontaminate themselves and any other personnel that have become contaminated on the objective. This decontamination system is for personnel only.
- *Technical reachback.* The CDD must be able to provide near-real-time technical reachback assistance to all SOTF units. This support includes information concerning TIMs, chain-of-custody questions, sample collection questions, and questions concerning health effects of exposure to CBRN material.

CBRN STAFF ELEMENTS

2-9. Each SFG(A) receives resources with CBRN staff elements from the group level down to the company level. These staff elements provide the commander with subject-matter expertise in CBRN-related issues and ensure that subordinate elements maintain a high level of CBRN readiness at all times.

GROUP CBRN CELL

2-10. The SFG(A) CBRN cell consists of the CBRN officer and CBRN staff NCO. The officer works as a special staff officer under the supervision of the group operations officer (S-3). Through staff visits, coordination, and inspections of subordinate units, the group CBRN cell serves as a focal point for CBRN operations. It assists subordinate units in the following CBRN defense areas to improve CBRN readiness:

- *Intelligence.* The CBRN cell provides technical assistance to the intelligence section for analysis of the CBRN threat and indigenous TIM facilities. It ensures that priority intelligence requirements (PIRs) and threat information are reflected in unit operation plans (OPLANs) and standing operating procedure (SOPs). The CBRN cell also assists the intelligence section in analyzing and interpreting CBRN-related samples/materials processed at the EAC. Additionally, the CBRN cell assists subordinate units in their threat analysis.
- *Personnel.* The SFG(A) CBRN cell provides recommendations concerning the assignment of CBRN personnel and assists in the professional development of subordinate unit CBRN personnel.
- *Training.* The SFG(A) CBRN cell is the best resource for CBRN training. The CBRN cell maintains a detailed catalog of available internal and external CBRN training available to the organic CBRN detachments and operational detachments. The CBRN cell assists subordinate units in planning and coordinating CBRN training. Upon completion of training, the group CBRN cell maintains a database of CBRN training and operational after action reports (AARs). The group cell also develops lessons-learned bulletins and disseminates them to subordinate units.
- *Vulnerability assessment*. The group CBRN cell conducts a vulnerability assessment for the group HQ in the event of deployment. The group CBRN cell also provides assistance when battalions conduct vulnerability assessments.

BATTALION CBRN CELL

2-11. The battalion CBRN cell consists of the CBRN officer and CBRN staff NCO. The cell trains personnel and helps plan CBRN operations. It also helps company CBRN NCOs. Should a battalion element larger than detachment size (12 personnel) become contaminated, the battalion CBRN cell will request CDD decontamination support. The battalion cell also supports the following issues:

- *Intelligence.* The CBRN cell provides technical assistance to the intelligence section for analysis of the CBRN threat and indigenous TIM facilities. It ensures that PIRs and threat information are reflected in unit OPLANs and SOPs. The CBRN cell assists the intelligence section in analyzing and interpreting CBRN-related samples/materials processed at the EAC. Additionally, the CBRN cell assists subordinate units in their threat analysis.
- *Training.* The battalion CBRN cell assists the company CBRN NCOs in developing and coordinating individual tasks training into company training events. Upon completion of training, the battalion CBRN cell maintains a database of CBRN training and operational AARs and submits them to the group CBRN cell.
- *Vulnerability assessment.* The battalion CBRN cell conducts a vulnerability assessment for the battalion HQ in the event of deployment. The cell also provides assistance when companies conduct vulnerability assessments.

COMPANY CBRN NCO

2-12. Each company has a CBRN NCO (E-5), and the SF battalion HQ company has a CBRN specialist (E-4). The company CBRN NCO advises the commander on the CBRN threat, training, equipment status, and MOPP levels. He stores, maintains, and accounts for all CBRN protective equipment assigned to the company. The battalion HQ company CBRN team also provides decontamination support to any battalion element that becomes contaminated and provides operational decontamination support for up to a detachment-sized element (12 personnel) without external support.

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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 that the CRD and CDD perform for an SFG(A). Ranger chemical teams provide protection 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.

MISSION

3-1. The DRT provides CBRN reconnaissance, surveillance, and decontamination support for its assigned battalion in support of strategic, operational, and tactical objectives in all environments (permissive, uncertain, and hostile).

MANNING

3-2. Figure 3-1 shows the composition of the Ranger DRT assigned to each Ranger battalion. The DRT has a staff sergeant (E-6) and consists of two teams. Each team consists of one sergeant (E-5) and two Skill Level 1 Soldiers (E-4), making it possible to support the battalion in decontamination, reconnaissance, and protection operations in two different locations or provide larger-scale support in one location.

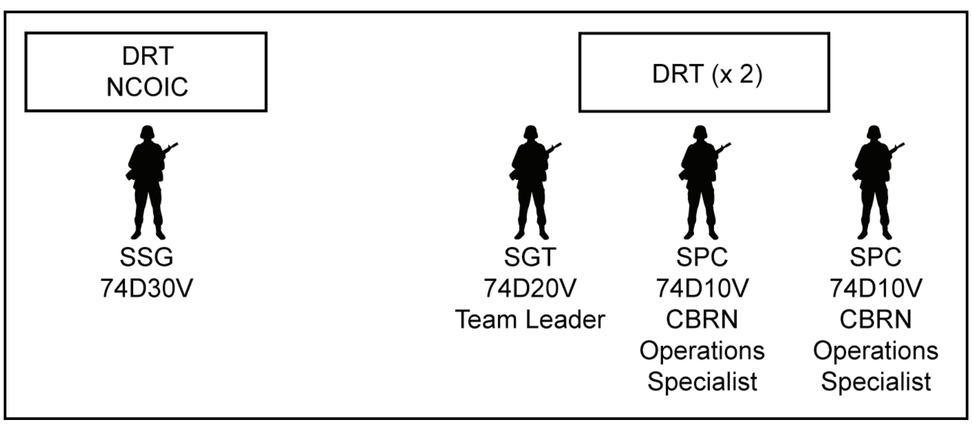

Figure 3-1. Decontamination and reconnaissance team organization and manning

COMMAND RELATIONSHIPS

3-3. DRTs are assigned to the Ranger support company in each Ranger battalion. The Ranger DRTs deploy in direct support to their Ranger battalion. Each DRT can function independently 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. The Ranger DRT can also function as a single entity operationally or during training to support battalion-, company-, and platoon-level operations. The battalion regularly attaches the DRT to companies and platoons as required. DRTs can be allocated to companies and platoons that are forward-deployed at outstations based on historical and emerging threat reporting.

3-4. DRT personnel maintain proficiency in individual, collective, and common Ranger tasks. These tasks are vitally important to facilitate integration with maneuver units and to increase the battlefield survivability of the DRT. Capabilities include, but are not limited to, the following:

- *Detect and identify WMD agents.* Each DRT must detect and identify low-level vapor concentrations of military chemical and biological agents. The DRT must also conduct a confirmatory analysis of a solid or liquid sample on site and communicate the results back to the maneuver commander in near-real time. At the time of writing, this capability exists for military chemical agents but is limited to liquid sample analysis for biological agents. As new equipment is developed, the accuracy, efficiency, and flexibility of this capability will continue to grow.
- *Detect and identify radioactive sources.* Each DRT must detect low levels of alpha, beta, gamma, and neutron radiation; determine distance to source; identify the isotope producing the radiation; and communicate the results to the maneuver commander in near-real time.
- *Identify TICs and TIBs.* Each DRT must identify samples of unknown solids, liquids, or vapors on site in near-real time. At the time of writing, the capability only exists to detect the presence of TIBs, but not to identify it without the resources of a medical laboratory.
- *Identify explosive compounds and gunshot residue.* Each DRT must identify explosive compounds from swipe tests of areas where the explosives were stored, bomb fragments, skin, and clothing. The DRT must also detect and identify explosive vapor signatures, conduct GSR testing on individuals identified by the maneuver commander, and have a redundant capacity to identify explosive compounds and GSR. Thus, the DRT can split into two-man teams and still perform this task.
- *Collect samples.* Each DRT must collect solid, liquid, wipe, air, vegetation, radiological, water, sludge, biomedical, bioassay, and tissue samples. Whenever possible, three samples of each material of interest are collected to provide the laboratory with the capability to conduct a representative and statistical analysis. Control samples are also collected when possible. Control samples consist of soil, air, water, and/or vegetation near the contaminated area, but which are not contaminated themselves. Due to the unique nature of Ranger operations, the DRT may be required to complete its mission faster by taking fewer samples and conducting EPDS closer to the sampling site. In such cases, control samples may not be collected.
- *Characterize the site.* Each DRT must provide the maneuver commander and intelligence personnel a detailed description of the objective using audio and visual means. This process begins with available imagery of the site. Upon entering the objective, DRT personnel make a detailed diagram of the objective, to scale when possible, and identify on the diagram where samples or evidence were collected from and the location of the photographer when sample or evidence site pictures were taken. At the sample locations, the DRT photographer takes pictures of the sample collection site and the sample. During postmission activities, the DRT leader verifies the completeness and accuracy of the site diagram, labels photographs with sample numbers, and attaches them to the diagram.
- *Analyze and report findings.* A critical part of any DRT operation is interpreting the results provided by the equipment and providing an initial analysis to the maneuver commander. This task is accomplished by having access to multiple chemical databases (NIOSH, ERG) on site and having near-real-time access to higher-level technical resources. The DRT leader provides the maneuver commander with an initial analysis within 1 hour of completing the mission, and a detailed analysis within 72 hours. The initial analysis informs the commander of any hazards associated with the samples taken, as well as any safety precautions necessary to protect the force. The detailed analysis provides an estimate of the potential uses for the substances found and identified.
- *Maintain chain of custody and proper transload operations.* The DRT must establish and maintain chain of custody of samples and evidence collected on an objective until the sample or evidence is properly transferred to an authorized agency. Once the receiving organization is

identified, the DRT must coordinate and conduct transload operations with that organization. The specific chain-of-custody procedures used will vary depending on the theater of operations and the level of scrutiny the samples or evidence is likely to come under. Chain-of-custody procedures can range from internal accountability of a sample to procedures required to allow evidence to be used in an HN court proceeding.

- *Operate expedient personnel decontamination system.* The DRT must set up, operate, and close down the EPDS to decontaminate themselves and any other personnel that have become contaminated on the objective. Should further decontamination be required, the DRT will assist the maneuver commander in coordinating for additional decontamination assets.
- *Conduct operational decontamination.* The DRT conducts no-notice operational decontamination of elements up to platoon size of its assigned Ranger battalion. Should a Ranger element become contaminated to a degree that is beyond the capabilities of the EPDS, the DRT moves to a suitable location as close to the contaminated unit as possible, and conducts MOPP gear exchange and vehicle washdown operations as required. This level of decontamination will **NOT** allow the contaminated unit to operate in reduced levels of MOPP.

CBRN STAFF ELEMENTS

3-5. The Ranger regiment has CBRN staff elements from the regimental level down to the company level. These staff elements provide the commander with subject-matter expertise in CBRN-related issues and ensure that subordinate elements maintain a high level of CBRN readiness at all times.

REGIMENTAL CBRN CELL

3-6. The regimental CBRN cell consists of the CBRN officer and CBRN staff NCO. The CBRN officer works as a special staff officer under the supervision of the regimental operations officer (S-3). Through staff visits, coordination, and inspections of subordinate units, the regimental CBRN cell serves as a focal point for CBRN operations. It assists subordinate units in the following CBRN defense areas to improve CBRN readiness:

- *Intelligence.* The CBRN cell provides technical assistance to the intelligence section for analysis of the CBRN threat and indigenous TIM facilities and ensures that PIRs and threat information are reflected in unit OPLANs and SOPs. The cell also assists the intelligence section in analyzing and interpreting information about CBRN-related materials. If necessary, the CBRN cell assists subordinate units in their threat analysis.
- *Training.* The regimental CBRN cell is the best resource for CBRN training in the Ranger regiment. The cell maintains a detailed catalog of internal and external CBRN training available to the organic CBRN detachments and operational detachments. The CBRN cell assists subordinate units in planning and coordinating CBRN training. Upon completion of training, the regimental CBRN cell maintains a database of CBRN training and operational AARs. The cell also develops lessons-learned bulletins and disseminates them to subordinate units.
- *Vulnerability assessment.* The regimental CBRN cell conducts a vulnerability assessment for the regimental HQ in case of deployment. The regimental CBRN cell also provides assistance when battalions conduct vulnerability assessments.

BATTALION CBRN CELL

3-7. The battalion CBRN cell consists of the CBRN officer and CBRN staff NCO. The battalion cell trains personnel and helps plan CBRN operations. It provides assistance to company CBRN NCOs and the assigned DRT. The battalion cell also assists subordinate units in the following CBRN defense areas:

- *Intelligence.* The CBRN cell provides technical assistance to the intelligence section for analysis of the CBRN threat and indigenous TIM facilities and ensures that PIRs and threat information are reflected in unit OPLANs and SOPs. The CBRN cell assists the DRT and intelligence section in analyzing and interpreting CBRN-related samples or materials collected from an objective. The CBRN cell also assists subordinate units in their threat analysis.

- *Training.* The battalion CBRN cell assists the company CBRN NCOs and the DRT in developing and coordinating individual and collective tasks into training events. Upon completion of training, the battalion CBRN cell maintains a database of CBRN training and operational AARs and submits them to the regimental CBRN cell.
- *Vulnerability assessment.* The battalion CBRN cell conducts a vulnerability assessment for the battalion HQ in case of deployment. The cell also provides assistance when companies conduct vulnerability assessments.

COMPANY CBRN NONCOMMISSIONED OFFICER

3-8. Each company has a CBRN NCO (E-5), and the battalion HQ company has a CBRN specialist (E-4). The company CBRN NCO advises the commander on the CBRN threat, training, equipment status, and MOPP levels. He stores, maintains, and accounts for all CBRN protective equipment assigned to the company.

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, because of 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 chemical defense, nuclear defense, and decontamination.

CBRN STAFF ELEMENTS

4-1. The regimental CBRN cell consists of the CBRN officer and CBRN staff NCO. The CBRN officer works as a special staff officer under the supervision of the regimental operations officer (S-3). Through staff visits, coordination, and inspections of subordinate units, the regimental CBRN cell serves as a focal point for CBRN operations. It assists subordinate units in the following CBRN defense areas to improve CBRN readiness:

- *Intelligence.* The CBRN cell provides technical assistance to the intelligence section for analysis of the CBRN threat and indigenous TIM facilities and ensures that PIRs and threat information are reflected in unit OPLANs and SOPs. The cell also assists the intelligence section in analyzing and interpreting information about CBRN-related materials. If necessary, the CBRN cell assists subordinate units in their threat analysis.
- *Training.* The regimental CBRN cell oversees CBRN training and readiness in the aviation regiment. The cell maintains a detailed catalog of internal and external CBRN training available to the organic CBRN detachments and operational detachments. The CBRN cell assists subordinate units in planning and coordinating CBRN training. Upon completion of training, the regimental CBRN cell maintains a database of CBRN training and operational AARs. The cell also develops lessons-learned bulletins and disseminates them to subordinate units.
- *Vulnerability assessment.* The regimental CBRN cell conducts a vulnerability assessment for the regimental HQ in case of deployment. The regimental CBRN cell also provides assistance when battalions conduct vulnerability assessments.

BATTALION CBRN CELL

4-2. The battalion CBRN cell consists of the CBRN officer and CBRN staff NCO. The battalion cell trains personnel and helps plan CBRN operations. It provides assistance to company CBRN NCOs and the assigned DRT. The battalion cell also assists subordinate units in the following CBRN defense areas:

- *Intelligence.* The CBRN cell provides technical assistance to the intelligence section for analysis of the CBRN threat and indigenous TIM facilities and ensures that PIRs and threat information are reflected in unit OPLANs and SOPs. The CBRN cell assists the DRT and intelligence section in analyzing and interpreting CBRN-related samples or materials collected from an objective. The CBRN cell also assists subordinate units in their threat analysis.
- *Training.* The battalion CBRN cell assists the company CBRN NCOs and the DRT in developing and coordinating individual and collective tasks into training events. Upon completion of training, the battalion CBRN cell maintains a database of CBRN training and operational AARs and submits them to the regimental CBRN cell.

- *Vulnerability assessment.* The battalion CBRN cell conducts a vulnerability assessment for the battalion HQ in case of deployment. The cell also provides assistance when companies conduct vulnerability assessments.

Company CBRN Noncommissioned Officer

4-3. Each company has a CBRN NCO (E-5), and the SOAR battalion HQ company has a CBRN specialist (E-4). The company CBRN NCO advises the commander on the CBRN threat, training, equipment status, and MOPP levels. He stores, maintains, and accounts for all CBRN protective equipment assigned to the company.

CHEMICAL DEFENSE

4-4. 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, it 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.

4-5. Flying an aircraft while wearing a protective mask and hood places the pilot and aircrew at an elevated risk, especially at night. The commander must evaluate the elevated risk and determine if the flight is necessary. This procedure should only be used once chemical weapons have been used in the theater of operations. The mask and hood should be kept on under the flight helmet even when using night vision goggles (NVGs). 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

4-6. 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 and the aircrew.

Actions Taken for Parked Aircraft

4-7. 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.
- 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 locations subjected to high overpressure effects.
- 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.

4-8. During premission 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 NVGs 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 TAKEN FOR FLYING AIRCRAFT

4-9. 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.

4-10. 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 TAKEN FOR AIRCREWS

4-11. Once the pilot has landed the aircraft, 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.

4-12. 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

4-13. A detailed explanation of immediate, operational, thorough, and clearance decontamination procedures can be found in FM 3-11.5, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination*. The 160th SOAR(A) only has resources to conduct operational decontamination. If a detailed aircraft decontamination operation is necessary, the regiment requests support from conventional forces units. The battalion and regimental CBRN cells coordinate this decontamination support from collocated conventional units. The aviation regiment provides—

- Any specialized decontamination equipment required (for example, DecoFogger or equivalent).
- Training for the conventional decontamination element on operating procedures for specialized equipment.
- Pilots and crew chiefs to ensure sensitive equipment and electronics are not damaged during the decontamination process.

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Chapter 5
Site Exploitation Support

This chapter defines the role that ARSOF CBRN assets have in supporting special operations forces site exploitation (SOFSE). In the current operating environment, operations are conducted based on intelligence information in order to maximize the effects of the operations. A critical source for intelligence collection is at the site of an operation. A detailed, thorough, and rapid exploitation of the objective is critical to collecting intelligence to develop future operations, as well as collecting evidence that can be turned over to law enforcement (either U.S. or HN) authorities for criminal prosecution of any individuals detained during the course of the operation. SOFSE support operations can occur in a hostile, uncertain, or permissive environment in support of any SOF mission, to include CWMD operations.

PHASES OF A SITE EXPLOITATION OPERATION

5-1. The three critical elements of a comprehensive site exploitation operation are mission planning, collection, and analysis. The mission planning phase starts when an ARSOF maneuver commander identifies the need for exploitation support. The supporting intelligence section assists the collection team in developing the collection plan that is then briefed to the maneuver commander. The intelligence section also coordinates for analysis of any collected materials through either the supporting EAC or other theater assets.

5-2. The collection phase begins once the objective is secured by the maneuver force. The collection team ensures that it is rapidly, yet methodically, examined for items that can be used to disrupt or attack U.S. interests (weapons, explosives, explosive components, WMD-related materials) and items of intelligence value (cell phones, computers, data storage devices, documents). Once the search is complete, all items found are collected, associated with a subject on the objective if possible, and have a chain of custody established. The collection team immediately attempts to identify any unknown samples collected using specialized equipment and determines if there are any immediate hazards to personnel on the objective. All collected materials are then transported to an analysis facility for further processing.

5-3. The analysis phase of a site exploitation mission only occurs when the collected material is transported to an EAC for analysis and begins when the collected materials arrive at the center. The analysis team leader ensures the proper and efficient processing of collected materials and prepares all technical information reports for submission to the joint special operations task force (JSOTF) intelligence section. The JSOTF section further disseminates the reports as required. In addition to preparing reports for operational use, the EAC also uploads relevant data (biometric data, chemical signatures, tire tread marks) to USG databases to provide a permanent record of findings and transfers/disposes of any collective materials, as required.

SITE EXPLOITATION SUPPORT

5-4. The two ARSOF components that require site exploitation support are the Ranger regiment and the SF group. Because of organization and mission differences, each of these two organizations has different site exploitation support capabilities. Figure 5-1, page 5-2, shows a detailed explanation of the site exploitation support cycle.

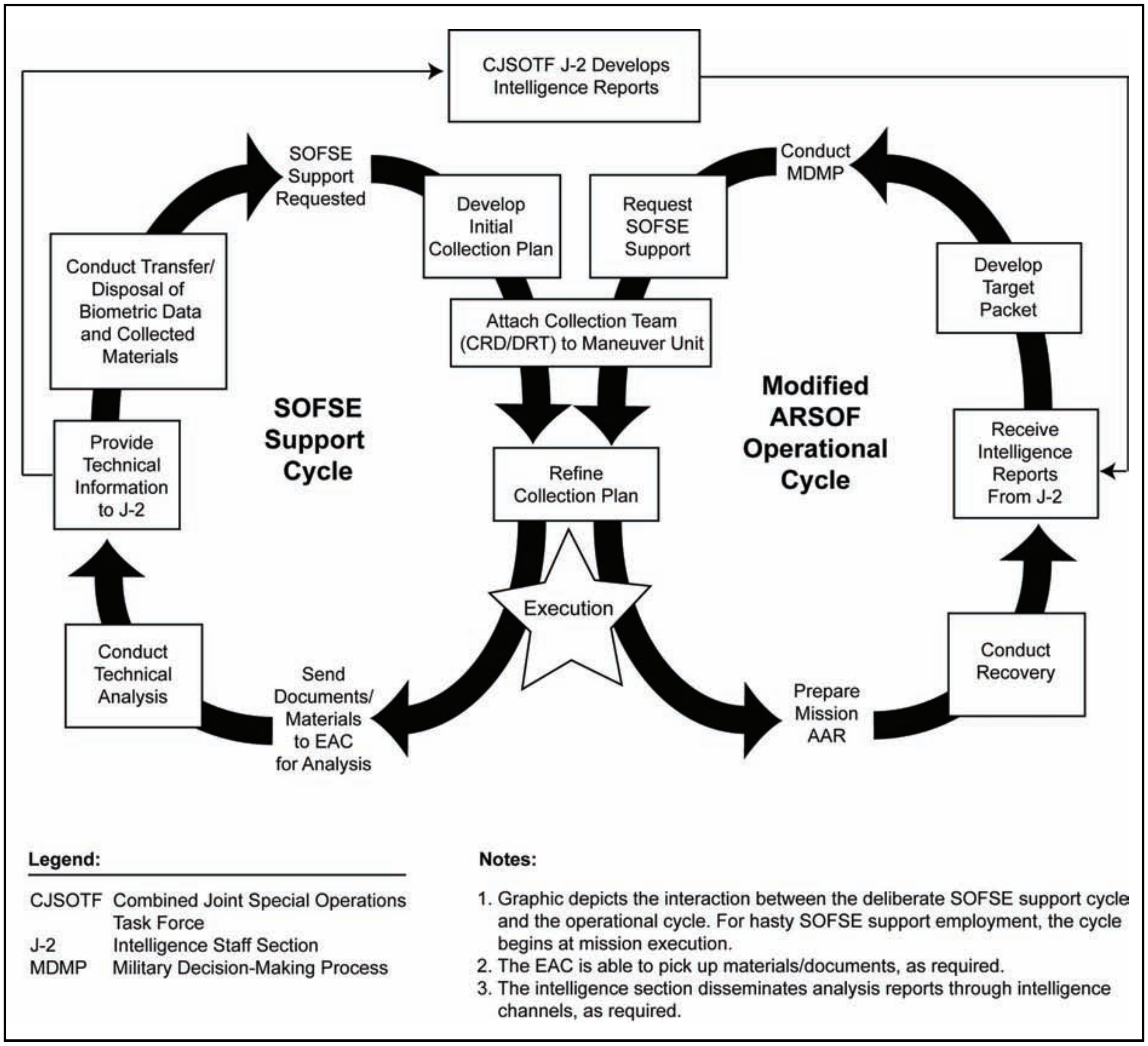

Figure 5-1. Site exploitation support cycle

RANGER REGIMENT

5-5. The requirement for site exploitation support is determined during the normal MDMP by the maneuver commander. Once this requirement is identified, the battalion DRT is attached to the maneuver force. The battalion intelligence section assists the DRT leader in developing the collection plan for the mission. The DRT leader then briefs the maneuver commander on the collection plan. Since the Ranger regiment does not have the capability to exploit electronic devices, the battalion intelligence section coordinates further exploitation of any material collected on the objective. If the maneuver element is operating in the same theater as a JSOTF, the battalion intelligence section can coordinate with the JSOTF to have the JSOTF organic EAC further analyze any materials collected, such as computer hard drives, cell phones, or document exploitation. If the maneuver commander determines that it is not feasible to transport the collected materials to the JSOTF EAC, the battalion intelligence section can coordinate with geographic combatant command theater exploitation assets for further analysis of collected materials.

SPECIAL FORCES GROUP

5-6. Once the maneuver commander determines a requirement for site exploitation support beyond the capabilities of his organic assets, the supporting CDA is attached to the maneuver force. The CDA leader assists the SFODA intelligence sergeant (18F) in developing the collection plan for the operation. The 18F also requests EAC support through the chain of command. The collection team identifies unknown substances and captures biometric information, but must send the collected materials to the EAC for a more detailed analysis. Upon mission completion, the collection team transports any collected materials to the EAC for exploitation of electronic media and data storage devices. The EAC also uploads relevant data (biometric data, chemical signatures, tire tread marks) to USG databases to provide a permanent record of findings.

SPECIAL OPERATIONS FORCES SITE EXPLOITATION COLLECTION TEAMS

5-7. The two ARSOF CBRN units that function as SOFSE collection teams are the CRD and DRT. These SOF detachments operate as an independent element that can be modified and attached to operational elements based on mission requirements. Collection teams may be attached short term for a specific mission or long term for integration into a forward deployment.

5-8. Collection teams have the capability to perform detailed SOFSE operations with advanced organic equipment. As such, they are capable of conducting or directing an exhaustive exploitation of an objective, and documenting and packaging materials collected beyond the capabilities of the operational element. Additionally, the CRD and DRT can fully operate in a CBRN-contaminated or oxygen-deficient environment. Each collection team has the following capabilities:

- Explosive detection and identification.
- Radiological detection and identification.
- TIM detection and identification, to include WMD agents and precursors.
- Fingerprint capture.
- Retinal scan capability.
- Capture of deoxyribonucleic acid (DNA) material on both living and deceased persons.
- Document capture.
- Capture of shoe or tire track impressions.
- Technical photography.

5-9. SOFSE collection teams have three different methods of mission support: deliberate, hasty, and home station.

DELIBERATE EMPLOYMENT

5-10. In the deliberate employment process, the maneuver commander identifies the need for and requests collection team support in the mission planning phase. The maneuver commander and intelligence section develop the collection plan for the exploitation site and communicate any special characteristics of the site (confined space, contaminated air, suspected activity at site) and special collection requirements (toxic; solid, liquid, or vapor; evidentiary requirements) to the collection team leader. Once the team arrives, personnel validate the collection plan and coordinate transportation and life-support requirements. For mission execution, the collection team leader reports directly to the maneuver commander until the exploitation phase begins. Once exploitation begins, the team reports to the collection manager appointed by the maneuver commander. If the collection team leader also acts as the collection manager for the operation, he continues to report to the maneuver commander. Upon return to the staging area, the team leader makes any nonhazardous, nonelectronic items (papers, photographs, bomb-making materials, weapons) available to the maneuver commander for examination, and provides an initial technical analysis of the items found and samples collected within 1 hour of returning. After briefing the maneuver commander, the team leader contacts the organic EAC and advises it of the nature of the materials being transported. The team then transports the items and samples collected from the site to the EAC for further exploitation. The team leader monitors the progress of the analysis, and verifies that the EAC has furnished the maneuver commander with a detailed analysis report within 24 hours from the time that the EAC has finished analyzing the collected materials.

HASTY EMPLOYMENT

5-11. If an operational element discovers an unexpected CBRN hazard or an objective with a significantly larger amount of intelligence materials than expected, a collection team may be called in if the maneuver commander deems necessary. In this case, the collection team assists the maneuver commander or designated collection manager in developing the collection plan at the site. The major drawback to this type of operation is that it will require more time on the objective than a deliberate operation. The more information about the site that can be shared with the collection team before they arrive will decrease the amount of time required to develop the collection plan and thus reduce the overall time spent on the objective. Once the collection team arrives and the collection plan is developed, the employment procedures and timelines for a deliberate operation apply.

HOME STATION

5-12. Collection teams can provide training on basic search, documenting, exploiting, and packaging TTP to operational elements when not forward-deployed. They can also be integrated into operational element training scenarios to exercise communication and coordination procedures.

EXPLOITATION ANALYSIS CENTER—ORGANIC

5-13. The EAC is established when in a deployed environment. At home station, personnel habitually assigned to the EAC during deployments perform their daily duties associated with their modified table of organization and equipment (MTOE) position. During predeployment planning, all necessary specialized skill sets not organic to the CDD are identified and the appropriate personnel are attached to the CDD for premission training to assume the EAC mission upon deployment. During deployment, the EAC officer in charge (OIC) reports directly to the JSOTF intelligence section OIC.

5-14. The EAC is manned by a combination of CDD and military intelligence detachment personnel. The CDD commander is the OIC of the EAC, and the CDD sergeant will be the EAC NCOIC. The computer plotter (E-6) and CBRN NCO (E-6) each become the analysis team leaders, and the two-man decontamination teams combine to form the rest of each analysis team with the sergeants (E-5s) as the assistant team leaders (Figure 5-2). The EAC OIC task-organizes other special skilled personnel as required to ensure the most efficient and thorough analysis is conducted for each set of collected material.

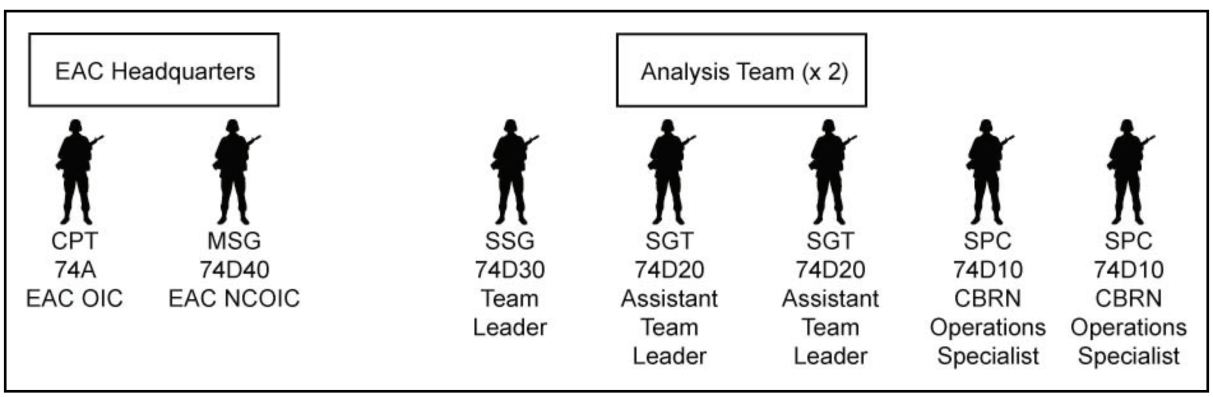

Figure 5-2. Exploitation Analysis Center organization and manning

5-15. When fully manned, the EAC has the following capabilities:

- Latent print lifting—submitting to database and query of database.
- Trace material detection and identification.
- Document and media exploitation, to include cell phones.
- Biometric support—submission and query of ground collected.

- 360-degree mapping of brass to determine if it came from the same weapon, is a firing pin mark, or is unique.
- Tire and tread mark impression.

5-16. The EAC has access to a secure Internet portal that will upload data to and query existing USG databases, instead of local ones, for biometric data, chemical signatures, radiological signatures, and tire and tread mark identification. This portal provides centralized storage of all collected data and is accessible by all authorized USG agencies. The EAC does not maintain a static capability suite.

EMPLOYMENT

5-17. The EAC is an SFG(A)-unique asset that can support theaterwide SOF exploitation analysis requirements. Once the EAC has deployed into theater, it will be collocated with the SOTF HQ. The EAC has two different methods of employment: deliberate and hasty.

DELIBERATE EMPLOYMENT

5-18. In the deliberate employment process, once the maneuver commander requests collection team support, the EAC is given a warning order (WARNORD) to prepare to receive items from that mission. The analysis team leader creates a folder to store information concerning the items recovered from the mission. Once contacted by the collection team leader, the analysis team will make necessary preparations to receive the recovered materials. The analysis team leader advises the EAC OIC if any specialized personnel are required to assist in the analysis. Upon arrival of the collection team, the team leader will brief the EAC OIC and analysis team leader about the exploitation operation, sign over custody of the materials, and transfer all data files associated with the recovered materials to the analysis team leader. The collection team remains accessible to the analysis team for the duration of the analysis process should any questions arise. When the analysis is complete, the EAC NCOIC conducts a quality check of the analysis products, furnishes a copy to the collection team leader, and turns the products over to the SOTF intelligence section NCOIC for processing. The EAC OIC then coordinates disposition instructions of the recovered materials with the intelligence section OIC.

HASTY EMPLOYMENT

5-19. Should a maneuver element recover materials from an objective without a collection team present, the maneuver commander can request support from the EAC through intelligence channels. The SOTF intelligence officer tasks the EAC OIC to provide support to the maneuver commander and assign an analysis team. Upon receipt of the tasking, the EAC OIC assigns an analysis team and dispatches the analysis team leader to pick up the recovered materials from the maneuver commander and transport them to the EAC for analysis. This type of employment only occurs with non-CBRN materials.

Note: Only CRD or DRT personnel can move CBRN materials.

5-20. Upon arriving at the maneuver element's location, the analysis team leader debriefs the maneuver NCOIC of the operation concerning the collection procedures and signs for the recovered materials. Once the analysis team leader arrives at the EAC, the procedures and timelines for a deliberate employment apply.

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Chapter 6

CBRN Staff Considerations and Planning 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

6-1. 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.

6-2. 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 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 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 6-1).

- 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 6-1. 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 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 mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (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 regard 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 affect 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. In general, 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 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 should also 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 milligrams [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) (68°F) 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.
- *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

6-3. 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.

6-4. 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.

6-5. 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.

6-6. 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.

6-7. 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.

> ***Note:*** Evacuation of contaminated patients is only conducted in extreme circumstances when the contaminated element does not possess any capability to decontaminate the patient before transport. If evacuation is required, the contaminated unit will make every effort to reduce the contamination on the patient by removing gross contamination prior to transport.

6-8. 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, they 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 6-2.

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 6-2. Host nation interoperability considerations

6-9. Regardless of the level of security involved, key planners from all disciplines (for example, intelligence, fire support, communications, logistics, PSYOP, and 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, to include—

- 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.

CBRN STAFF RESPONSIBILITIES

6-10. 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.

6-11. 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.

6-12. 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 PIRs 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.

6-13. 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.

6-14. 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 Department of Defense (DOD) personnel. S-4 logistics planning should include component liaison officers 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.

6-15. 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.

6-16. 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.

6-17. The ***CA staff planner*** participates in the MDMP and recommends CA forces and series that support missions based on the commander's intent. The planner ensures that the CA augmentation supports the commander's objectives for CBRN, which may include HN decontamination assistance and providing protective equipment to civilians and HN support personnel.

6-18. The ***CBRN officers*** ensure 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 CBRN 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.

6-19. 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.

6-20. The ***PSYOP staff planner*** participates in the MDMP and recommends PSYOP forces and series that support missions based on the commander's intent. The planner ensures that the PSYOP augmentation supports the commander's objectives for CBRN, which may include programs designed to dissuade an adversary from initiating a CBRN attack or implementing programs designed to mitigate fear in friendly populations and help restore order in the event of an attack.

6-21. The ***public affairs (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.

6-22. 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 clear ROE for execution of the mission, which could encompass a diverse set of tasks.

6-23. 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

6-24. 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 SPECIAL OPERATIONS FORCES

6-25. 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.

6-26. 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.

6-27. 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.

6-28. 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.

6-29. 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: Additional specific guidance on intelligence support is provided in JP 3-05 and the JP 2-0 series of publications.

METEOROLOGICAL AND OCEANOGRAPHIC SUPPORT OF SPECIAL OPERATIONS FORCES

6-30. 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.

LOGISTICS SUPPORT OF SPECIAL OPERATIONS FORCES

6-31. The theater special operations command (TSOC) or the JSOTF commander determines SOF theater of operations logistics requirements for the GCC. Logistics support for SOF units is provided through one or more of the following functional areas.

Service Support

6-32. The logistics 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 special operations command, the joint force special operations component command, or a JSOTF. SOF logistics support includes the sustainment and replenishment of all classes of supply, maintenance, transportation, facilities, and services.

Joint In-Theater Support

6-33. 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 may also 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

6-34. 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: FM 3-05.140, *Army Special Operations Forces Logistics*, contains additional information on SOF logistics support.

COMMUNICATIONS SYSTEMS SUPPORT OF SPECIAL OPERATIONS FORCES

6-35. 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.

6-36. 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.

6-37. 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.

PUBLIC AFFAIRS SUPPORT OF SPECIAL OPERATIONS FORCES

6-38. 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 SPECIAL OPERATIONS FORCES

6-39. 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 SPECIAL OPERATIONS FORCES

6-40. 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 SPECIAL OPERATIONS FORCES

6-41. Combat camera use provides still and video documentary products that support 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 SPECIAL OPERATIONS FORCES

6-42. 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 may also 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

6-43. 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. 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.

6-44. 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 6-3, page 6-12, lists the tasks involved in PCISE.

6-45. SOTF commanders may receive the mission to collect materiel and environmental samples (vapor, liquid, solid) and clinical specimens (dead animal tissue) as evidence to support intelligence and operational requirements to substantiate that a CBRN attack has occurred, provide presumptive 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.

6-46. 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.

6-47. The data from sampling operations supports the 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 (vapor, liquid, solid), and clinical specimens (tissue) from animals or suspected contaminated animal specimens.

- Collect RA samples, such as RAs spread throughout an area as radioactive dust particles, pellets, or industrial waste.
- Provide presumptive identification of chemically or biologically contaminated samples.

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

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 liaison officer 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 6-3. PCISE tasks

6-48. 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: Appendix D provides further information on SOF CBRN advanced sampling TTP. Additional sampling information is provided in FM 3-11.19, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance*. Appendix E explains the procedures to conduct SOF element decontamination options.

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Chapter 7

Passive Defense Operations

A robust passive defense capability can both reduce the effects of a CBRN incident and provide a psychological deterrent to threat forces that may be considering conducting an attack against U.S. interests using CBRN materials. The nature of ARSOF missions and unit compositions offer some significant advantages in passive defense. ARSOF units are highly mobile and do not need to occupy large areas to function. As such, it is very difficult to successfully conduct a CBRN attack against ARSOF units. However, because of their mobility ARSOF units have very limited organic CBRN defensive and early warning capabilities. The priority of effort in ARSOF CBRN passive defense operations is contamination avoidance and coordination with conventional force units for COLPRO and decontamination requirements.

CONTAMINATION AVOIDANCE

7-1. Most ARSOF missions require small elements of ARSOF Soldiers to operate away from large U.S. base clusters. This procedure is both a strength and weakness in contamination avoidance. It is a strength because if the enemy decides to attack U.S. forces with CBRN materials, it will generally target large troop concentrations to have the most effect both in casualties and media coverage. Since most ARSOF elements are not located on large base clusters, there is a greater chance that they will not be targeted for a CBRN attack. However, it is also a weakness because operating away from large base clusters means that ARSOF generally have, at best, only limited access to COLPRO equipment and may be forced to abandon their base entirely in the event of a CBRN attack.

7-2. When selecting the location for a new ARSOF base camp, units should consider the vulnerability to a CBRN attack. The importance of these considerations must correspond with how likely the enemy is to use CBRN materials in an attack. Units should consider the following when selecting a location:

- Proximity to industrial facilities.
- Civilian population density around the base camp area.
- Threat CBRN capabilities.
- Meteorological data (prevailing wind direction and speed, precipitation amounts).
- Proximity to water sources.
- Terrain.

7-3. If a CBRN release, whether accidental or intentional, occurs within the AO of an ARSOF element, every effort should be made to stay a safe distance from that area. The CRD or DRT can determine the extent and type of contamination and provide estimates as to how long the contamination will last. If the CRD or DRT is not available, ARSOF elements can coordinate with conventional units to help determine what areas are contaminated. Also, ARSOF units should engage the local population to determine where contaminated areas exist.

7-4. ARSOF commanders can reduce the vulnerability to contamination and disease by enforcing uniform standards and personal hygiene, and ensuring that all personnel have received any required vaccinations before deployment.

INDIVIDUAL PROTECTIVE EQUIPMENT

7-5. ARSOF units are issued either the JSLIST protective overgarment or the chemical protective undergarment (CPU) depending on mission requirements. Either of these will provide temporary protection against most chemical or biological agents and against alpha and beta radiation indefinitely. Since ARSOF units generally operate in small groups over large areas, resupply of CBRN protective gear may not be feasible. ARSOF units mainly use the existing supplies of protective gear to escape the contaminated area.

7-6. Due to the nature of some ARSOF missions and the threat assessment, the mission commander may decide not to bring IPE due to space and weight constraints. Should an ARSOF unit unknowingly enter a contaminated area without IPE, personnel can take the following steps to reduce the possibility of exposure to contamination:

- *Cover all exposed skin.* Even ordinary clothing provides some protection against CBRN contamination. The main concern is to minimize the skin contact with the agent. If an item of clothing becomes contaminated with liquid agent, the Soldier should remove it immediately and cover it with a clean article of clothing. If that is not possible, he should apply dry, absorbent material (dirt, sawdust, foot powder) to the contaminated area to absorb as much contamination as possible. He should change the contaminated article of clothing as soon as possible.
- *Breathe through a wet cloth.* Breathing through a clean, wet cloth will stop most large particulate matter from entering the respiratory tract. The cloth will mainly be effective against radioactive dust particles and some industrial chemicals. Soldiers should make sure to wash the cloth frequently to avoid contamination buildup.
- *Wear sealed eye protection.* Chemical and biological agents can rapidly enter the circulatory system through the eyes. Wearing sealed eye protection will best help limit exposure and prevent eye damage.
- *Tape down all openings in clothing.* Soldiers can try to make a sealed outer garment by applying tape to cuffs, collars, and zippers. This method will help reduce the chance that the contamination will make direct contact with skin.

***Note:* These steps are for escape purposes only.** Upon encountering contamination, personnel must **immediately** retreat to the last known uncontaminated location and coordinate for decontamination or medical treatment.

COLLECTIVE PROTECTION

7-7. ARSOF units do not have any significant organic COLPRO capability. All COLPRO requirements must be coordinated with conventional forces units. Should a large-scale CBRN event occur where ARSOF is operating and the GCC determines that ARSOF needs to continue operations in the contaminated area, the affected ARSOF elements must coordinate for sufficient COLPRO space to continue to conduct operations.

EARLY WARNING SYSTEMS

7-8. ARSOF units are equipped with chemical agent alarms at the company and detachment levels. Properly emplaced, they will provide enough early warning of nerve or blister agent vapor clouds for personnel to don their protective equipment and move away from the contaminated area.

7-9. Due to the nature of ARSOF operations, ARSOF units may not be able to properly emplace the chemical agent alarms to provide adequate early warning. If this is the case, the following procedures may provide enough early warning for the ARSOF unit to either don protective equipment or avoid becoming contaminated. If any of the following are observed, immediately don mask, sound the alarm per unit SOP, seek cover, conduct immediate decontamination if necessary, and don MOPP gear:

- Unexplained low-hanging clouds.
- Unexplained liquid puddles.

- Unexplained dead or dying animals.
- Unexplained smells (for example, the smell of freshly cut grass in a desert environment).
- Reports of contamination from local population.
- Unexplained physical reactions (choking, convulsions) from nearby individuals.

DECONTAMINATION

7-10. ARSOF elements use decontamination procedures modified to fit the particular situation. ARSOF units may be operating in denied or nonpermissive territory and therefore require a high degree of stealth in all phases of a mission. The modified decontamination procedures 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.

7-11. Commanders must evaluate the threat, tactical situation, and decontamination system availability when deciding how to decontaminate. An ARSOF unit 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 E defines and explains the specific procedures for these three options.

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Appendix A

Unit and CBRN Organic Support

COMMON DETECTION EQUIPMENT

1. **Chemical Agent Detector Paper, M8.** National Stock Number (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, Technical Manual (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. **Biological Integrated Detection System (BIDS).** NSN 6665-01392-6191, TM 3-666-F349-12&P. The 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. The BIDS is an Army Corps-level asset (SOF nonasset).
8. **Chemical Agent Detector Kit, M256A2.** NSN: 6665-01-563-7473, TM 3-6665-426-10. The M256A2 chemical agent detector kit is designed to detect and identify blood (AC and CK), blister (H, HN, HD, CX, and L), and nerve (V and G series) agents, and consists of a carrying case, 12 sampler-detectors, instruction cards, and M8 paper.
9. **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).
10. **Chemical Agent Monitor (CAM).** 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).
11. **Individual Chemical Agent Detector (ICAD).** NSN 6665-01-340-1693. The 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 force protection missions in certain roles (Army and AF nonasset).

12. **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 the chemical protective filter unit (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 Integrated Suit Technology (JSLIST).** 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).

14. **SCPE, 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.

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 decontaminating solution, 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. **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.
4. **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.
5. **Decontamination Kit, Individual Equipment, M295.** NSN 6850-01-357-8459, FM 3-11.4. The M295 uses absorptive resin, unlike the liquid-based kits. It is a pouch, designed to fit in the cargo pocket of the Army combat uniform (ACU), and contains four individually wrapped, wipe-down mitts to decontaminate personal equipment.
6. **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 lewisite, V and G agents, and biological agents. It ignites on contact with liquid mustard agent or any organic compound such as JP8, diesel, or any petroleum, oils, and lubricants (POL) product.
7. **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 lewisite, V agents, and all biological materials, including bacterial spores. HTH ignites on contact with liquid mustard agent or any organic compound such as JP8, diesel, or any POL product. Personnel should observe the same precautions as for STB.

SPECIAL OPERATIONS FORCES DETECTION EQUIPMENT

1. **Sabre 4000.** Commercial off-the-shelf (COTS) equipment manufactured by Smiths Detection, Inc. Provides presumptive identification of known WMD agents, narcotics, explosives, and TICs. Can be used in either vapor sampling or swipe sampling modes. Uses ion mobility spectrometry analysis technique. Currently fielded to CRDs.
2. **Inspector 1000.** COTS equipment manufactured by Canberra, Inc. Real-time isotope identification and classification; able to determine the location and strength of sources. Displays dose rate equivalent H*(10). Audible warning and alarm limits for gamma and neutron dose rate. Detects alpha, beta, gamma, and neutron (with neutron adapter) radiation. Estimates source strength and distance, and can identify isotope. Currently fielded to CRDs. ***Note:*** Source shielding can affect results.
3. **Hazmat-ID.** COTS equipment manufactured by Smiths Detection, Inc. Provides confirmatory analysis of solid or liquid samples using Fourier Transform Infrared Spectrometry. Has input ports for keyboard and mouse, MS Windows OS, and supports external storage devices. Can receive and transmit data via Ethernet connection in conjunction with a communications platform. Currently fielded to CRDs.
4. **First Defender.** COTS equipment manufactured by Ahura Scientific, Inc. Provides presumptive identification of known WMD agents, narcotics, explosives, and TICs. Uses Raman laser spectroscopy. Can conduct identification through clear plastic or glass containers of solid or liquid samples. Currently fielded to CRDs.

SPECIAL OPERATIONS FORCES 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. **M53 mask.** The M53 has been approved for SOF use. It is compatible with SCBA, powered air-purifying respirator (PAPR), and closed-circuit breathing apparatus (CCBA).
3. **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 (alpha and beta only).
4. **SCBA.** COTS equipment. Provides up to 1 hour of supplied air.
5. **Draeger PAC III.** COTS equipment. CCBA. Provides up to 4 hours of supplied air.
6. **PAPR.** Provides powered filtered air supply. Attaches to M45 and M53 masks.

JOINT EQUIPMENT

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 system detects and identifies biological agents. It consists of several monitoring units that can be used in the defense of large sites, such as airfields.
3. **Joint Service Light CBRN Reconnaissance System (JSLCBRNRS).** NSN 6665-01-323-2582. The 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).** The MDS consists of a decontamination pumper and two high-pressure washer modules. Each module may be transported on a 3/4-ton trailer. The MDS is supported by two 3,000-gallon, self-supporting fabric water tanks and one 125-gallons per minute (gpm) water pump (NAVSOF nonasset).
5. **Multipurpose Integrated Chemical Agent Detector (MICAD).** The 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).** The JCAD detects nerve and blister agents. It is lightweight, portable, and has interferant technology that reduces false alarms. The JCAD will allow detection of emerging threat agents.
7. **Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD).** The JSLSCAD is a passive, infrared detection unit that detects nerve and blister vapor clouds at a distance of up to 5 kilometers while the detector is moving.
8. **Joint Biological Point Detection System (JBPDS).** The JBPDS provides common-point detection for all services. It detects BWAs at low threshold levels and identifies the agents within 15 minutes.
9. **Sorbent Decontamination System (SDS).** The 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).** The 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.

Appendix B

Personal Protective Equipment

PERSONAL PROTECTIVE EQUIPMENT 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). This equipment 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 or more than 23.5 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 and less than 23.5 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 personal protective equipment use

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

PERSONAL PROTECTIVE EQUIPMENT 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 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 identification 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).

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 warm zone (or decontamination zone), and the cold zone (or support zone).

HOT ZONE (EXCLUSION AREA)

B-5. The hot zone is an area immediately surrounding a CBRN incident that extends far enough to prevent adverse effects from released contamination to personnel outside the zone. 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 NIOSH Immediately Dangerous to Life or Health value.
- A high relative humidity.

WARM ZONE (DECONTAMINATION ZONE)

B-9. The warm zone is the area between the hot and cold zones where decontamination operations (decontamination corridor) and hot zone support take place. It includes control points for the access corridor, and thus assists in reducing the spread of contamination.

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.

COLD ZONE (SUPPORT ZONE)

B-15. The cold zone is an area that is readily accessible and provides a clean location for support operations. 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 BWAs 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 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.

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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 consequence management 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. More information about the CNR is found at 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 programs. 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. More information about ECBC is found 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 AARs 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 close air support ranges. Additionally, unmanned aircraft systems, nine drop zones, and a full-scale biological and chemical training and testing facility are available for use. More information about DPG is found at 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 Fort Leonard Wood, Missouri. More information can be found at http://wood.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

C-8. The Defense Nuclear Weapons School (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 Defense Threat Reduction Agency (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-Department of Energy (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.

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Appendix D

CBRN Sampling Techniques and Procedures

GENERAL

D-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 D-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 CBRN agents 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 to 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 information, 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 D-1. Sampling guidance issues

CHEMICAL AND BIOLOGICAL SAMPLING (ENVIRONMENT)

D-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

D-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.

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

D-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.

D-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

D-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.

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

D-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.

D-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 wrapping 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

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

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

D-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.

D-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

D-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.

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

D-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.

D-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:*** FM 4-02.7, *Multiservice Tactics, Techniques, and Procedures for Health Service Support in a Chemical, Biological, Radiological, and Nuclear Environment*, contains additional clinical specimen information; FM 3-11.19 contains additional information on environmental samples.

RADIOLOGICAL AGENT SAMPLING

D-19. Radiological sampling operations are important to determine if and where a threat uses an RA. 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 RAs 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

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

D-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, 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.

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

D-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

D-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).

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

D-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.

D-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

D-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).

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

D-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.

D-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

D-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 or 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

D-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 from which the collector took the sample. ***Note:*** The country acquisition codes are contained in FM 3-11.19, Appendix E.
- *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: LA850115-002-JD; LA—Collector took sample in Laos; 850115—Sample obtained on 15 January 1985; 002—This is the second sample obtained on 15 January 1985; JD—John Doe collected the sample. Samples must be carefully controlled to be of greatest value. 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

D-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 addressee. 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.

D-35. The team ships all samples via the fastest, safest means (preferably via technical escort unit [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.

D-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?"

D-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.

D-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 CONUS technical centers or intelligence agencies without coordination and before approval by the recipient.

WITNESS INTERVIEWS

D-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 interviews 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

D-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 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 can 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 may also 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

D-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.

D-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.

D-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

D-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.

D-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?"

D-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

D-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 as 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

D-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 where 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

D-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 because of 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. The collector should 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 some 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, and 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, and a picture of the casualty taken.
- 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

D-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.

D-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 D-2 through D-4, pages D-11 through D-16.

TASKS	PROCESS
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. ☐ 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.

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

TASKS	PROCESS
Package the sample (continued).	▪ 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 the 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 D-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.

PROCESSING 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. ☐ 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 than 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.

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

PROCESSING SOIL SAMPLES (continued)

- 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.

PROCESSING 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.
- 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 the amber sample bag with sample documentation.

☐ Step 11. Remove excess air from the amber sample bag and roll down the top of the bag.

☐ Step 12. 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 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 D-3. Storing samples in the amber sample bag (continued)

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

D-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.

PROCESSING 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.
- ☐ 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 the 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 the blue sample bag with sample documentation.
- ☐ Step 15. Remove excess air from the blue sample bag and roll down the top of the bag.
- ☐ Step 16. Wrap tape all the way around the 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.

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

PROCESSING 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.
- 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 the blue sample bag and roll down the top of the bag.
- Step 15. Wrap tape all the way around the 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.

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

PROCESSING 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.
☐ 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 11. Place up to three Whirl-Pak bags with jars into the blue sample bag with sample documentation.
☐ Step 12. Remove excess air from the blue sample bag and roll down the top of the bag.
☐ Step 13. Wrap tape all the way around the 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 14. 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 15. Place all sealed blue sample bags into a single drawstring bag.

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

MISCELLANEOUS SAMPLES

D-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.

D-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.

D-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

D-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

D-57. One person other than the sampler or packager will keep a detailed reconnaissance log of pertinent information in a notebook. All entries are identified by the sample number. The reconnaissance log is 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 contains the following:

- 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

D-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 unit identification code (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 who took the sample (Figure D-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 D-5. Sample label

CHAIN OF CUSTODY

D-59. Samples must be carefully controlled to be of greatest value. A chain of custody must be recorded using a chain-of-custody form (for example, FM 3-11.19, Figure E-2, Sample or Specimen Custody Document).

D-60. The Specimen Custody Document (FM 3-11.19) must be completed by the collector. The collector must ensure he retains a copy of the chain of custody. The country codes are contained in FM 3-11.19, Table E-2. 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).

D-61. After the sample is taken, it must be evacuated immediately. The sampling unit coordinates its own assets and transports the sample to the sample transfer point. 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

D-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.

D-63. Sampling waste can easily become a problem if not properly managed. Each workstation **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.

Appendix E

Special Operations Forces Element Decontamination Options

UNSUPPORTED SOF ELEMENT DECONTAMINATION

E-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 E-1, pages E-1 and E-2, should be followed.

STEPS	ACTIONS
1	While the operational element moves to the ORP, the decontamination element members at the ORP set up a modified hasty decontamination site. The site will include a hot line (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), 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 E-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 by the decontamination element. The mission is continued.

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

EXPEDIENT PERSONNEL DECONTAMINATION SYSTEM

E-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.

E-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.

E-4. The following is a generic sequence of events for a mission requiring EPDS in a potentially contaminated area. Figure E-2 depicts a basic layout for an EPDS decontamination site. Figures E-3 (page E-4) and E-4 (page E-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.

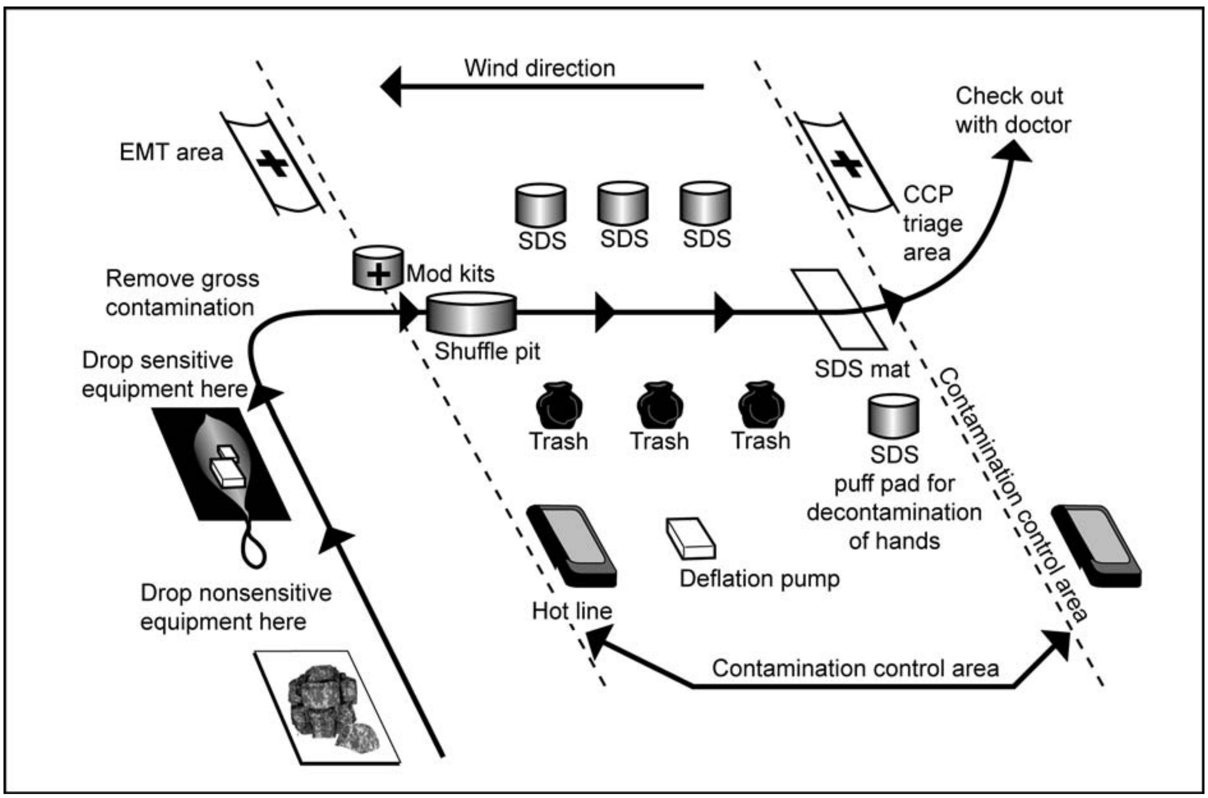

Figure E-2. Expedient personnel decontamination site

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 E-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 E-4. Two-piece cutout

E-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 cutout procedure similar to the onion peel procedure.
- Use the exact cut template that corresponds to the ensemble worn (currently JSLIST VII and FRIES).
- 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.

E-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.

E-7. The decontamination site must have specific personnel on hand. At each site, there should be one HL 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 E-5, pages E-6 and E-7, provides the component data for the EPDS rucksack.

DIRTY EXFILTRATION DECONTAMINATION

E-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 detailed troop decontamination (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 contains additional decontamination details.

Item	Note	Quantity
Boundary Bag	Water is carried in a 5-gallon collapsible bladder inside a vector pack. If available, seawater 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

Figure E-5. EPDS rucksack component data

Item	Note	Quantity
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 E-5. EPDS rucksack component data (continued)

BASIC AIRCREW DECONTAMINATION ACTIONS

E-9. The decontamination actions identify a standard set of instructions to doff aircrew equipment and clothing after actual or suspected CBRN contamination. Figure E-6, pages E-7 through E-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 bootlaces. **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.

Figure E-6. Aircrew decontamination stations

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.

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: Check crew member for contamination by using the CAM.
- 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.

Figure E-6. Aircrew decontamination stations (continued)

STATION 2A (continued)
• CREW MEMBER: Place R/L hand under the neck dam and lift AERP 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 E-6. Aircrew decontamination stations (continued)

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

AAR	after action report
ABC	airway, breathing, circulation
AC	hydrogen cyanide
AERP	aircrew eye and respiratory protection
AF	Air Force
AO	area of operations
AOR	area of responsibility
APR	air purifying respirator
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
BWA	biological warfare agent
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
CCBA	closed-circuit breathing apparatus
CCDR	combatant commander
CCIR	commander's critical information requirement
CCL	contamination control line
CDA	chemical detachment A
CDD	chemical decontamination detachment
CNR	Center for National Response
COA	course of action
COLPRO	collective protection
CONUS	continental United States
COTS	commercial off-the-shelf
CP	counterproliferation
CPFC	chemical protective footwear cover
CPOG	chemical protective overgarment

CPT	captain
CPU	chemical protective undergarment
CPWMD	counterproliferation of weapons of mass destruction
CRD	chemical reconnaissance detachment
CRDEC	Chemical Research, Development, and Engineering Center
CT	counterterrorism
CW	chemical warfare
CWA	chemical warfare agent
CWMD	combating weapons of mass destruction
DA	direct action
DNWS	Defense Nuclear Weapons School
DOD	Department of Defense
DPG	Dugway Proving Ground
DRT	decontamination and reconnaissance team
DTRA	Defense Threat Reduction Agency
EAC	Exploitation Analysis Center
ECBC	Edgewood Chemical Biological Center
EMP	electromagnetic pulse
EMT	emergency medical treatment
EO	Executive Order
EOD	explosive ordnance disposal
EPDS	expedient personnel decontamination system
EPW	enemy prisoner of war
ERG	Emergency Response Guide
F	Fahrenheit
FID	foreign internal defense
FM	field manual
FRIES	fast-rope insertion and extraction system
GB	Sarin
GCC	geographic combatant commander
GD	Soman
GRR	ground radiological reconnaissance
GVO	green vinyl overboot
GZ	ground zero
HAZMAT	hazardous materials
HD	mustard agent
HEPA	high-efficiency particulate air
HL	hot line
HMMWV	high-mobility multipurpose wheeled vehicle
HN	host nation
HNS	host-nation support

HQ	headquarters
HTH	calcium hypochlorite
IAW	in accordance with
ICAD	Individual Chemical Agent Detector
ICAM	Improved Chemical Agent Monitor
IO	information operations
IPE	individual protective equipment
IPOE	intelligence preparation of the operational environment
JBPDS	Joint Biological Point Detection System
JCAD	Joint Chemical Agent Detector
JP	joint publication
JSLCBRNRS	Joint Service Light CBRN Reconnaissance System
JSLIST	Joint Service Lightweight Integrated Suit Technology
JSLSCAD	Joint Service Lightweight Standoff Chemical Agent Detector
JSOTF	joint special operations task force
LD	lethal dose
LHA	liquid hazard area
LSD	lysergic acid diethylamide
MDMP	military decision-making process
MDS	Modular Decontamination System
METOC	meteorological and oceanographic
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, and civil considerations
mg	milligram(s)
MICAD	Multipurpose Integrated Chemical Agent Detector
MOPP	mission-oriented protective posture
mph	miles per hour
MSG	master sergeant
NATO	North Atlantic Treaty Organization
NAVSOF	Navy special operations forces
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NMS-CWMD	National Military Strategy for combating weapons of mass destruction
NRC	National Response Center
NSN	National Stock Number
NVG	night vision goggle
OIC	officer in charge
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
PIR	priority intelligence requirement
POL	petroleum, oils, and lubricants
PPE	personal 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
S-1	personnel officer
S-2	intelligence officer
S-3	operations officer
S-4	logistics officer
S-5	plans officer
S-6	command, control, communications, and computer systems directorate officer
SB(SO)(A)	Sustainment Brigade (Special Operations) (Airborne)
SCBA	self-contained breathing apparatus
SCPE	Simplified Collective Protective Equipment
SCUBA	self-contained underwater breathing apparatus
SDS	Sorbent Decontamination System
SF	Special Forces
SFC	sergeant first class
SFG(A)	Special Forces group (airborne)
SFODA	Special Forces operational detachment A
SGT	sergeant
SME	subject-matter expert
SO	special operations
SOA	special operations aviation
SOAR(A)	special operations aviation regiment (airborne)
SOF	special operations forces
SOFSE	special operations forces site exploitation
SOP	standing operating procedure
SOTF	special operations task force
SPC	specialist

SR	special reconnaissance
SSE	sensitive site exploitation
SSG	staff sergeant
STB	super tropical bleach
TEU	technical escort unit
TIB	toxic industrial biological
TIC	toxic industrial chemical
TIM	toxic industrial material
TM	technical manual
TSOC	theater special operations command
TTP	tactics, techniques, and procedures
USAJFKSWCS	United States Army John F. Kennedy Special Warfare Center and School
USASOC	United States Army Special Operations Command
USG	United States Government
USSOCOM	United States Special Operations Command
UW	unconventional warfare
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.

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.)

biological agent

A microorganism that causes disease in personnel, plants, or animals, or causes the deterioration of materiel. (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

A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate mainly through its physiological effects. The term excludes riot control agents when used for law enforcement purposes, herbicides, smoke, and flames. (JP 1-02)

chemical, biological, radiological, and nuclear defense

Measures taken to minimize or negate the vulnerabilities and/or effects of a chemical, biological, radiological, or nuclear incident. Also called **CBRN defense**. (JP 1-02)

chemical, biological, radiological, and nuclear environment

Conditions found in an area resulting from immediate or persisting effects of chemical, biological, radiological, or nuclear attacks or unintentional releases. Also called **CBRN environment**. (JP 1-02)

chemical contamination

See contamination.

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)

collective protection

The protection provided to a group of individuals which permits relaxation of individual chemical, biological, radiological, and nuclear protection. Also called **COLPRO.** (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)

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

A combination of preparatory and responsive measures designed to limit the vulnerability of forces to chemical, biological, radiological, nuclear, and toxic industrial hazards and to avoid, contain, control exposure to, and, where possible, neutralize them. (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 environments, the act of locating chemical, biological, radiological, and nuclear hazards by use of chemical, biological, radiological, and nuclear detectors or monitoring and/or survey teams. (JP 1-02)

dirty

Chemical, biological, radiological, and nuclear defense 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 1-02)

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 to save lives, minimize casualties, and limit the spread of contamination. This may include decontamination of some personal clothing and/or equipment. (JP 1-02)

individual protective equipment

In chemical, biological, radiological, or nuclear operations, the personal clothing and equipment required to protect an individual from chemical, biological, and radiological hazards and some nuclear hazards. (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.

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 operations units assigned or attached to support the conduct of specific missions. Also called **JSOTF**. (JP 1-02)

lysergic acid diethylamide

Formerly lysergide, commonly known as acid, is a semi-synthetic psychedelic drug of the ergoline family. Also called **LSD.**

mission-oriented protective posture

A flexible system of protection against chemical, biological, radiological, and nuclear 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 military members. 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.

off-gassing

Vapor release of biological or chemical agents.

pathogen

A disease-producing microorganism that directly attacks human tissue and biological processes. (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

Preservation of the effectiveness and survivability of mission-related military and nonmilitary personnel, equipment, facilities, information, and infrastrucure deployed or located within or outside the boundaries of a given operational area. (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, not listed in a schedule of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure. Also called **RCA**. (JP 1-02)

sensitive site exploitation

A related series of activities inside a captured sensitive site to exploit personnel documents, electronic data, and material captured at the site, while neutralizing any threat posed by the site or its contents. Also called **SSE.** (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.

toxic industrial biological

Any biological material manufactured, used, transported, or stored by industrial, medical, or commercial processes which could pose an infectious or toxic threat. Also called **TIB**. (JP 1-02)

toxic industrial chemical

A chemical developed or manufactured for use in industrial operations or research by industry, government, or academia. For example: pesticides, petrochemicals, fertilizers, corrosives, poisons, etc. 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. Also called **TIC**. (JP 1-02)

toxic industrial material

A generic term for toxic or radioactive substances in solid, liquid, aerosolized, or gaseous form that may be used, or stored for use, for industrial, commercial, medical, military, or domestic purposes. Toxic industrial material may be chemical, biological, or radioactive and described as toic industrial chemical, toxic industrial biological, or toxic industrial radiological. Also called **TIM**. (JP 1-02)

toxin

Poisonous substances that may be produced naturally (by bacteria, plants, fungi, snakes, insects, and other living organisms) or synthetically. (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-yield explosives or nuclear, biological, chemical, or radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part from the weapon. Also called **WMD**. (JP 1-02)

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