

## Appendix B

**NBC Considerations**

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**THREAT**

Threat forces have engaged in sustained efforts to build up their combat capability. These efforts have focused on their ability to employ NBC weapons. They have also focused on their ability to fight and survive in an NBC environment. Threat doctrine clearly envisions the use of chemical weapons. The use of chemical weapons may be done in conjunction with either nuclear or conventional weapons. Threat forces are large, well equipped, and well trained in NBC operations and defense. In addition to specialized NBC troops, all other threat combat and combat support forces receive extensive NBC training. Therefore, it is imperative that US forces plan to fight in an NBC environment.

Nuclear weapons have a greater blast effect than conventional weapons. The thermal (heat) and nuclear radiation from them pose significant hazards. CSS supplies and equipment can be crushed, dragged, or tumbled by blast effect. Personnel can receive internal and external injuries from the blast, nuclear radiation, and thermal radiation. Thermal radiation can cause fires in supply points. Unit supply distribution may be hampered by trees that have blown down. In addition, dirt and dust raised by the blast can obscure both vision and sighting devices. The EMP from a nuclear detonation can damage ADP and communications equipment and make them inoperative. Night nuclear attacks can create a serious dazzle for personnel in the vicinity of the detonation.

Biological and chemical weapons are engaged to delay, degrade, incapacitate, or kill personnel. In a

chemical environment, personnel must wear protective clothing, gloves, masks with hoods, and overboots to protect themselves from contamination. Based on the immediate threat and mission requirements, CSS commanders must determine what MOPP level their units will assume.

Threat forces may also employ nonnuclear weapons that replicate the destructive effects of small tactical nuclear weapons. Normally, the S2 will identify that the enemy has this type of munition available for employment. The defensive measures used against this type of munition are the same as those used to defend against a nuclear attack.

This type of attack produces intense heat and overpressure. It does not produce radioactive fallout. Follow-up NBC-1 reports must be sent to the DISCOM and supported brigade S3s. These reports prevent any misunderstanding that US forces have been subjected to nuclear attack. These reports are sent with a FLASH precedence and include a text message identifying that no radiation is associated with the attack.

The most effective protective measures against most biological weapon systems are good field sanitation, good personal hygiene and up-to-date immunizations. The protective mask must also be readily available and properly fitted. Adequate protection against biological toxins such as "yellow rain" require the appropriate MOPP level of protection.

**NUCLEAR, BIOLOGICAL, AND CHEMICAL DEFENSE**

Contamination avoidance, protection (individual and collective), and decontamination are the basic measures for defense against NBC hazards. Units must train in these defensive measures in order to minimize the effects of NBC attacks.

In a chemical environment, DISCOM personnel may have to work in full protective equipment. Working in MOPP-4 for extended periods reduces productivity. CSS units take longer to do their jobs. Contaminated equipment hampers salvage, recovery, reclassification,

and maintenance operations. Commanders have to decide either to perform time-consuming decontamination operations or increase personnel risk to accomplish the mission. Maintenance may have to be performed on contaminated equipment. All medical patients have to be decontaminated before entering medical treatment facilities.

Units should cover critical supplies and equipment to protect them from chemical/biological contamination and from nuclear fallout. Also, personnel should avoid chemical/biological contamination or radiation whenever possible. These procedures keep the requirement for decontamination to a minimum.

As the NBC threat increases, commanders should consider dispersing their units over a larger area. However, even with a greater dispersion, units must still be able to defend against the conventional threat.

### NBC PLANNING

CSS plans for NBC operations must be flexible and, as basic information of interest to tactical commanders, must receive wide dissemination. NBC operations require increased emphasis on —

- Conducting vulnerability analyses.
- Avoiding contamination.
- Establishing priorities for decontamination support. This is done in coordination with the MMC chief.
- Providing guidance on the planning and execution of surveys following NBC attacks. Results of these surveys may affect support operations in the division area.
- Planning for alternate methods of CSS. Interruptions in the LOC must be anticipated.
- Balancing of the need for increased movement against the capability to perform the mission.
- Continuing CSS with reduced resources.
- Making changes in basic loads.
- Planning to augment the CSS capability by the addition of NBC decontamination teams as required.

When CSS elements disperse, they must ensure that their support mission continues. In addition, every effort must be made to reduce the CSS vulnerability to enemy rear attack. Smoke and obscurants increase the survivability for many critical logistics activities. Smoke provides countermeasures to enemy reconnaissance, surveillance, directed energy weapons, and target acquisition. Some activities that would benefit from the use of smoke are fast refuel operations, ATP reconstruction, and decontamination operations. MSR security and engineering sustainment operations would also benefit from the use of smoke.

Equipment decontamination and smoke support are available from the division chemical company and corps assets. Supporting teams from the division chemical company may be attached to DISCOM units depending on the existing situation and threat.

- Providing for rapid augmentation or movement of medical units, on-site emergency treatment, and timely evacuation of large numbers of patients.
- Controlling traffic to prevent development of potential targets resulting from traffic congestion.
- Planning for the rehabilitation of critical routes as soon as possible after damage.
- Planning for the timely procurement of civilian resources (manpower and materiel) to supplement division capabilities for security and CSS functions.
- Planning for the time constraints of operating in an NBC environment. Support operations are slowed in an NBC environment. Some activities may be temporarily stopped. This occurs because individuals must work in MOPP-4. In addition, units modify support operations in order to control and minimize contamination.
- Responding to the increased demand for individual and unit NBC defensive items of clothing, equipment, and supplies.

## COUNTERING NUCLEAR WEAPONS OR CHEMICAL/BIOLOGICAL AGENTS

When the enemy uses nuclear weapons or chemical/biological agents, unusual demands are placed on all CSS activities. These demands and the measures to counter them are discussed in the following paragraphs.

### SUSTAINING THE SOLDIER

In an active NBC environment, DISCOM units reduce division stockage to the lowest level needed for mission accomplishment. This allows for maximum

mobility, dispersion, and contamination avoidance. Forward units carry full basic loads and protect themselves against contamination to allow units to accomplish their missions until they can be resupplied. Supply personnel issue the most critical supply items to the division on a preplanned push basis. Emergency resupply may be by air. Supply personnel disperse and cover reserve stocks to avoid presenting lucrative targets and to minimize the risk of destruction or contamination.

In an active NBC environment, DISCOM personnel should frequently test for contamination of supplies and logistics operational assets. Continuous monitoring is desirable. Supply personnel use containers made from composite materials to package supplies. They issue the containers in protective overwrap. The overwrap prevents liquid contamination of the contents and allows easy decontamination of the containers. Supply personnel do not normally issue contaminated stocks. They segregate them from clean stocks until they are fully decontaminated.

In emergencies when no other stocks are available, they may issue certain contaminated supplies. However, they issue contaminated supplies only if it would give the receiving unit a decisive tactical advantage. They issue contaminated supplies first to units similarly contaminated. Only under the most dire circumstances would they issue contaminated stocks to an uncontaminated unit. The issuing and receiving commanders jointly make the decision to issue contaminated items. Supply personnel make every attempt to avoid unnecessary spread of contamination. They clearly mark contaminated stocks using standard NBC markers.

Supply personnel do not normally provide preplanned Class I resupply to units operating in or near contaminated areas. Units carry enough MREs to conduct operations without daily resupply. Units store rations under protective coverings or in containers to prevent or reduce contamination. They limit decontamination efforts to removing the containers and carton overwrap. They normally do not use rations that are contaminated. Supporting chemical units and medical personnel can provide technical assistance and advice on the use of rations.

Selected Class II items, such as chemical defense equipment, receive priority of issue to selected units on an NBC battlefield. The commander gives highest priority support to units located in contaminated areas. The next priority is to units deployed in forward areas.

Supply points do not issue and units do not use contaminated water. If a water source is suspected of contamination, personnel mark it with standard NBC markers and do not use until it is tested, treated with an ROWPU if necessary, and determined to be safe to use. Whenever water becomes contaminated and cannot be treated for drinking purposes, personnel dispose of it in a manner that prevents secondary contamination and mark the area appropriately. They monitor all water treatment, storage, and dispensing equipment frequently for possible contamination.

Multiple nuclear attacks from high-yield-nuclear weapons or chemical/biological agents will have a heavy impact on available HSS. Advanced stages of MOPP result in heat buildup and reduced mobility. There will also be a degradation of speech, sight, touch, and hearing. This will degrade individual and unit operational effectiveness and productivity. Medical units require augmentation commensurate with the threat to continue in an NBC environment.

When an operation is planned, the division surgeon reviews current health and radiation exposure status of units involved and the exposure predicted in the commander's plan. The division surgeon gives the commander general estimates of the –

- Reduction in effectiveness of personnel due to exposure to radiation.
- Number and time-phasing of casualties that may occur.
- Increases to the medical work load and the requirements expected of the medical units.

Contamination is one of the major problems in providing medical support in an NBC environment. To increase survivability and supportability, medical units should take necessary action to avoid contamination. This lessens the initial effects of nuclear weapons. They should protect medical supplies and equipment from contamination with chemical agent resistant coatings or protective coverings. They should disperse Class VIII stocks to prevent or reduce damage or contamination caused by NBC weapons. They should decontaminate contaminated items prior to issue to using units.

Each physically capable individual is responsible for carrying out required decontamination of himself and his equipment as soon as possible. Decontamination stations need to be established and conveniently located for the flow of patient traffic at MTFs. See Figure B-1. Patients should be decontaminated prior to evacuation

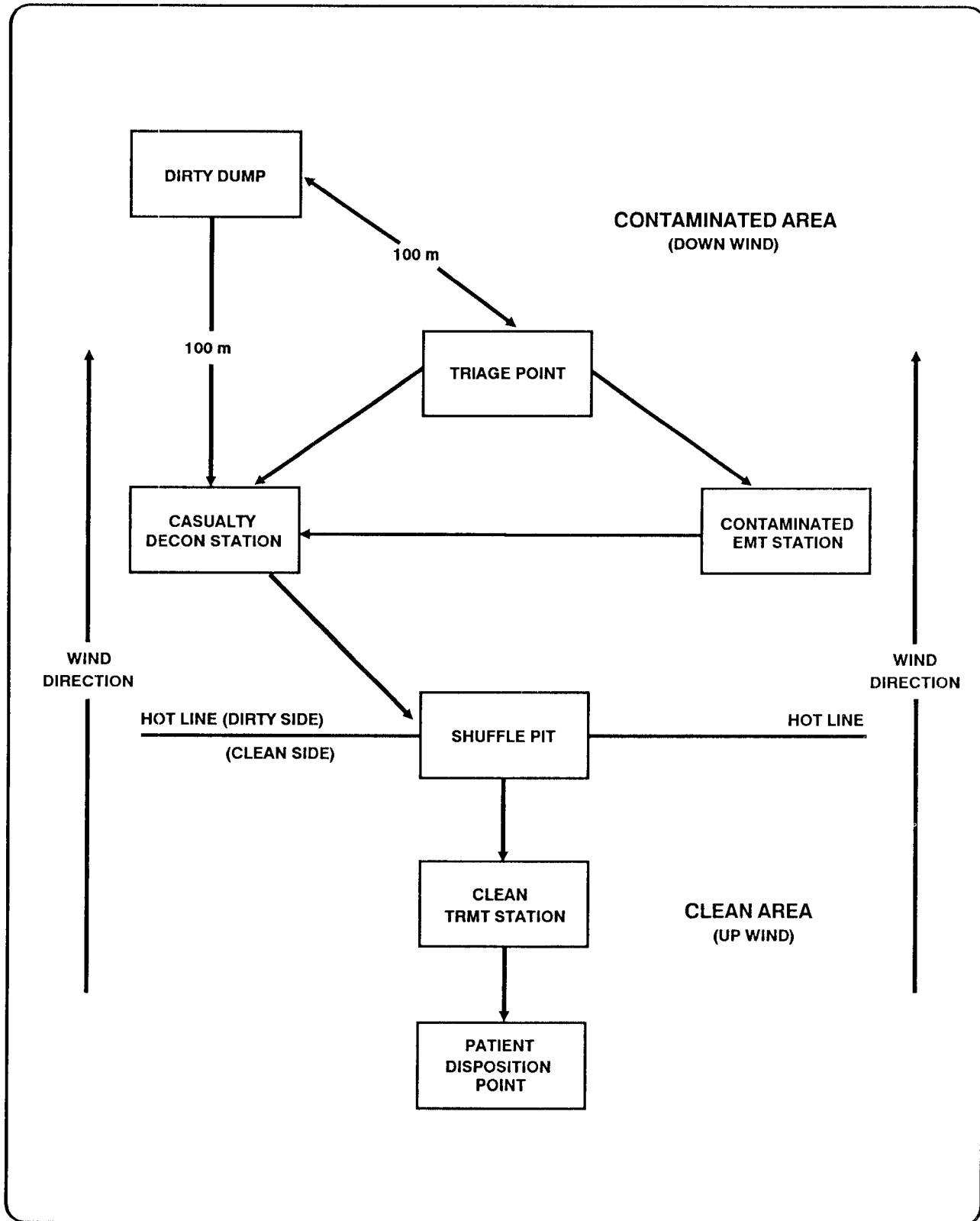


Figure B-1. Health service processing station in an NBC environment.

by aircraft or ground vehicles. Medical units are responsible only for the decontamination of patients who have reached medical facilities and are unable to perform self-aid. If medical units are responsible for decontamination of patients, augmentation decontamination support is essential. A significant degradation of medical support results if evacuation personnel have to man decontamination stations. Personnel do not admit patients to MTFs in clothing or blankets known to be or suspected of being contaminated. Decontamination, however, does not deter treatment being provided in life-threatening situations. Contaminated patients are treated in contaminated treatment areas.

Medical personnel base treatment and evacuation of NBC patients upon manifested signs and symptoms. SOP govern the use of prophylactic measures following known or suspected agent attacks. Following a nuclear attack, individuals who suspect radiation injury may reach the treatment facility to seek medical attention. Suspected nuclear radiation injury alone, without specific symptoms and physical findings, does not justify evacuation. Ordinarily, in nuclear and conventional warfare, burns and traumatic injury are the basis for early medical care and evacuation.

In an NBC environment, special GRREG task groups are formed. They identify remains generated due to NBC warfare. They tag these remains with an international NBC tag and inter them at a site within the contaminated area. They mark the site with the standard international marker. They record locations and site layout in accordance with standard procedures and FM 10-63. Normally, they do not evacuate contaminated remains to a GRREG collection point. If remains are evacuated, GRREG personnel (in MOPP gear) place them in chemical protective remains pouches. These pouches are marked with the type and date of contamination. They handle and decontaminate remains in accordance with FM 3-5 and FM 10-63. Recovery and decontamination of remains for final disposition are accomplished after hostilities cease or if the tactical situation, time, and other resources permit.

Commanders curtail renovation operations in an NBC environment in favor of higher priority missions. In addition, except for clothing decontamination and critical functions such as hospital service, they curtail laundry service in an active NBC environment.

### **ARMING THE FORCE**

Selected high-usage Class IV items come in consolidated shipping containers for protection against NBC effects. This reduces handling and allows for responsive

support. Supply personnel may issue contaminated or partially decontaminated Class IV items when properly identified. The user decontaminates contaminated Class IV items.

In NBC conditions, supply personnel separate Class V supplies from other commodities and keep them as mobile as possible. Protective covers lessen exposure to nuclear and chemical contamination. They resupply at night as much as possible. Ammunition support elements are responsible for decontaminating ammunition under their control, although large-scale decontamination may require additional support. If the situation requires the issue of contaminated stocks, supply personnel use the standard NBC marker. After issue, the user performs required decontamination. ATP personnel should be prepared to operate in contaminated areas if sites cannot be decontaminated.

### **FUELING THE FORCE**

Class III is critical in an NBC environment. In emergencies, corps units may have to deliver directly to tactical units and forward arming and refuel points. Emergency resupply to isolated units may be by air. Supply personnel disperse storage locations and activities. They protect ancillary equipment to the same extent as major items of equipment. Storage tanks and bladders protect bulk petroleum to a large degree. However, supply personnel take precautions to reduce contamination on tanks and bladders.

### **FIXING THE FORCE**

Avoiding contamination of equipment is easier than decontaminating it. Decontamination is time-consuming and it causes corrosion and damage to some types of equipment. Providing overhead cover for equipment and supplies significantly reduces liquid contamination of such materiel.

Using units decontaminate their own equipment within their capabilities. Equipment turned over to maintenance personnel should be as free of contamination as the using unit can make it. When using units are not able to decontaminate equipment, they should mark the equipment with the type and the date/time of contamination. If feasible, they should mark the specific areas of equipment contamination to alert maintenance personnel of the danger. They should also segregate contaminated materiel.

When using units cannot decontaminate damaged or inoperable equipment that is critical to the battle, maintenance personnel prepare to repair it at a

contaminated MCP. Establishment and use of a contaminated MCP limits contamination and consolidate contaminated repair assets. A contaminated MCP is similar to a hasty decontamination site. It should be far enough forward to limit the spread of contamination, yet far enough back to buy time for MOPP-4-clad mechanics.

In NBC conditions, corps heavy materiel supply companies are responsible for decontamination of Class VII items before issue. If supply points have to issue contaminated items, the receiving unit is responsible for decontamination. Prior to issue of contaminated items, supply personnel affix the standard NBC marker to the items. They make every effort to avoid abandoning Class VII items due to contamination.

In NBC conditions, personnel salvage only critical items in short supply. They salvage items that are contaminated but critical to return a major weapon system to operation upon command approval. They mark items that cannot be decontaminated with standard NBC markers.

### **MOVING THE FORCE**

Nuclear attack presents a variety of problems for the DISCOM transportation system. For example, blown-down trees block routes, and radioactivity makes areas impassible. EMP generation disrupts communications.

Chemical attack causes unique problems as well. The corrosive nature of some chemical agents destroys or makes inoperative some types of equipment. The efficiency of mechanics, equipment operators, and support personnel decreases as they work in MOPP gear. The forward delivery concept places large numbers of vehicles in the division rear and brigade areas. Chemical contamination of these assets drastically reduces transportation capabilities because they cannot return to populated rear areas until detailed decontamination is completed. The time required to decontaminate, coupled with probable shortages of decontamination supplies and equipment, causes spot shortages of vehicles.

Delivery of contaminated cargo is normally made only to similarly contaminated units. If cargo becomes contaminated in transit, drivers immediately contact the TMT commander or the MCO for disposition instructions. They contact the DMMC and determine if the cargo is to be delivered to the original consignee. However, if the cargo is in the area of the receiver, and the receiver is known to be contaminated, contact is made with the receiver to determine if the cargo is essential and must be delivered immediately as is. It is the receiving unit's responsibility to decontaminate "dirty" cargo.

Drivers do not move contaminated cargo over "clean" routes unless combat need dictates otherwise. Planners route movement of "clean" cargo to bypass contaminated areas. If bypass is not possible or practical, material is airlifted if time permits. Transfer points are established on the fringes of contaminated areas where "clean" cargo is transloaded onto "dirty" equipment.

In short, time is lost. To compensate, the MCO should constantly plan for the worst. Alternative routes should always be available. Backup modes should be available for critical supplies. Cargo visibility should be constant, and the MCO should be able to identify and divert critical material at any time. Plans and supplies for decontamination should be available. FM 3-5 and FM 3-100 provide further information on NBC decontamination and operations.

Requirements for airdrop increase significantly on a nuclear or chemical battlefield. Air delivery expedites resupply and provides a swift means to bypass contaminated areas. Personnel check all air-dropped supplies and equipment for contamination. If contaminated, they decontaminate them before further processing. They mark items which remain contaminated with a standard NBC marker. Whenever rigging takes place in a contaminated area, they mark all supplies and airdrop equipment with standard NBC markers and advise air crews. FM 100-27 contains more information on airdrop. Airdrop planning factors are in FM 101-10-V2.