DEPARTMENT OF THE NAVY
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IN REPLY REFER TO
BUMEDINST 3400.1
BUMED-02C
28 Feb 94

BUMED INSTRUCTION 3400.1

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical Department Personnel

Subj: OPERATIONAL CONCEPT FOR MEDICAL SUPPORT AND CASUALTY MANAGEMENT IN CHEMICAL AND BIOLOGICAL WARFARE ENVIRONMENTS

Ref: (a) NAVMEDCOMINST 6470.10
(b) NAVMED P-5041, Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries (NOTAL)
(c) NAVMED P-5059, NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6 (NOTAL)
(d) NWP-6, Operational Medical and Dental Support (NOTAL)
(e) COMNAVSURFLANTINST 3541.1B/COMNAVSURFPACINST 3541.4A, Repair Party Manual (NOTAL)
(f) USMC FMFM 4-50, Health Services Support (NOTAL)

Encl: (1) Concept of Operations
(2) Chemical Casualty Triage Procedures
(3) Decontamination of Nonambulatory Chemically Contaminated Casualties
(4) Decontamination of Ambulatory Chemically Contaminated Casualties
(5) Medications Matrix

1. Purpose. To describe health service support (HSS) operations in support of sea, amphibious assault, and shore chemical and biological (CB) warfare environments.

2. Scope

a. Applies to all Navy and Marine Corps personnel or commands exposed to contamination by CB-agents and medical treatment facilities (MTFs), fixed and nonfixed.

b. Applies from the period of exposure, injury, or contamination, to the individual's return to duty or treatment at an MTF providing definitive care. Definitive care is the complete HSS necessary for extended evaluation and treatment of seriously contaminated or injured personnel.

c. Applies to CB agent exposures occurring both in time of war and as a result of a peacetime disaster.

d. Management of irradiated or radioactive-contaminated personnel is excluded from this instruction. Such casualties are managed under reference (a).

3. Background

a. General

(1) The introduction of CB-weapons into a conventional conflict significantly impacts medical support. The casualty environment is complicated by a mix of CB, conventional and combined injuries. Triage becomes even more critical since the medical system may be rapidly overloaded. Medical personnel will be severely constrained and encumbered by individual protective equipment (IPE), which includes protective overgarments, mask, gloves, and boots. Personnel who perform duties while wearing IPE are especially susceptible to heat exhaustion. Due to the physical constraints imposed by IPE, many routine tasks require more time to complete. To provide effective support, medical personnel shall be equipped and trained to overcome difficulties imposed by a CB warfare environment.

(2) Effective HSS of the Operating Forces in CB environments shall be predicated on a realistic concept of operations and sufficient manpower, facilities, equipment, and training. These concepts shall encompass the treatment, handling, and evacuation of CB casualties with traumatic or combination injuries. The environment may change, but concepts of casualty handling do not change appreciably. Decontamination, protected environments, hazard monitoring, and patient protection capabilities are required for effective HSS. What does change is the nature of the hazard and its resulting casualty profile.

(3) The lack of rapid detection and identification systems for biological warfare agents challenges operational HSS. The essential ingredients to maintaining a defensive posture are an aggressive surveillance program, identifying the biological contaminating agent, personal protective measures, comprehensive knowledge of the threat, and advanced training.

b. Threat

(1) Elements of the former Soviet Union may still have offensive capability that includes a wide variety of CB agents, weapons, and delivery systems. The use in the 1980s of CB agents (toxins) in Afghanistan demonstrated Soviet Union willingness to use such weapons. These actions reemphasize the historical use of these types of weapons against unprepared nations. Future technological trends point to the increased effectiveness of new CB weapons and delivery systems. The use of chemical weapons in the Iran-Iraq War and Southeast Asia underlines the fact that possession and employment of chemical agents are no longer

limited to the major powers. The capability to manufacture CB weapons in the Third World increases the possibility of United States forces encountering CB weapons.

(2) Fixed MTFs outside of the continental United States (OCONUS) and Fleet Marine Force (FMF) medical units may not be specific targets but could become contaminated as a result of attacks on nearby compounds. Weather conditions can add to the risk of admitting CB casualties before decontamination stations are in operation.

(3) Attacks on ships will force the Medical Department to function in a contaminated environment. In an amphibious environment, attacks on landing forces may also affect the ship by CB-agent drift from shore or CB casualties evacuated to the ship.

4. Action

a. Planning. MTFs and commands at high risk of handling contaminated personnel must develop local procedures which include:

(1) Availability and location of local resources able to handle CB casualties. Identification of medical treatment equipment, facilities, and transportation assets.

(2) Availability of trained nonmedical personnel and instrumentation necessary to provide agent identification, detection levels, and decontamination.

(3) Training. Those Medical Department officers and senior independent duty corpsmen assigned to, or in augmentation billets for, units of the Operating Forces (amphibious ships, mobile seabee units, Marine Corps FMF units, hospital ships or fleet hospitals) shall receive the one week course in Medical Management of Chemical Casualties offered by the Army Medical Institute of Chemical Defense.

(4) Plans for minimizing the contamination and chemical exposure for medical personnel.

b. Medical Care

(1) The procedures for medical treatment of chemical, as well as combined chemical and conventional injuries, are contained in references (b) and (c). Navy medical doctrine is for each Sailor and Marine to carry either three Mark I Kits or three atropine and three 2-PAM Chloride autoinjectors for treatment of nerve agents. Echelons of medical care have been summarized from reference (d). Enclosures (1) through (5) are provided to assist both medical and nonmedical personnel in the handling and

management of CB warfare casualties. References (e) and (f) also contain information concerning procedures for management of CB casualties.

(2) No individual or group shall be denied access to necessary treatment or medical evacuation because of CB contamination. The intent of this instruction is to prepare echelon 1 and 2 medical facilities to receive and treat wartime casualties contaminated with CB agents. However, all MTFs shall recognize and prepare for the potential receipt of a contaminated patient, whether as the result of combat or accidental release of hazardous materials. An exposed individual who has not received benefit of decontamination must be regarded as a management exception and be treated by properly protected health care providers, until he or she can be adequately cleansed and moved into medical spaces. Accordingly, all MTFs shall establish decontamination stations and exercise the procedures outlined in enclosures (2), (3), and (4).

(3) With the exception of self-aid and buddy-aid materials, stockage of medical treatment materials listed in enclosure (5) shall be based on a 4 percent casualty rate.

5. Form. DD 1380 (6-62), U.S. Field Medical Card, S/N 0102-LF-013-5500 is available from the Navy Supply System and may be requisitioned per NAVSUP P-2002D.

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CONCEPT OF OPERATIONS

1. General Considerations. Effective HSS of the Operating Forces in a CB environment must be predicated on a realistic concept of operations. This concept includes sufficient manpower, facilities, equipment, and training. The concepts which follow encompass the treatment, handling, and evacuation of chemically contaminated casualties. Their injuries may be chemical, traumatic, or both. Figure 1 shows a five echelon approach which has been overlaid on the traditional continuum of care as outlined in reference (d), and is based on levels of care available in each echelon. The criteria for each echelon of care are described in the following paragraphs. Medical judgement continues to play a significant role in the handling of CB casualties.

a. Echelon 1. Care encompasses first aid, self-aid, or buddy-aid, provided at the forward line of own troops (FLOT). Skilled medical intervention by company or ship's corpsman may be available, but only limited lifesaving measures can be provided in a contaminated environment because the medical provider and the casualty will be in IPE. In amphibious operations, the company corpsman and the battalion aid station provide first echelon care. Casualties exposed to nerve agents self-administer one atropine and one 2-PAM antidote autoinjectors. The decision for and administration of additional autoinjectors is made by a buddy. If a casualty is incapacitated, three atropine and three 2-PAM autoinjectors shall be administered consecutively if available. If the casualty is demonstrating convulsions, the buddy shall administer the casualty's diazepam autoinjector. The casualty shall then wait for assistance from medical personnel. Casualties shall be spot decontaminated (hasty decontamination) with a personal skin decontamination kit such as the M291, if possible, before evacuation.

b. Echelon 2. Capability broadens emergency lifesaving procedures and stabilization of casualties until evacuation is possible. Such emergency measures would include: resuscitation, administration of intravenous fluids, control of bleeding, treatment of shock and emergency surgery. Maintaining airways and other procedures can only be performed when casualties have been decontaminated and are in a collective protective system (CPS) environment or in facilities located in noncontaminated areas. Examples of echelon 2 facilities include: collecting and clearing companies, surgical support companies, casualty receiving and treatment ships (CRTS), battle dressing stations aboard ship, or fixed MTFs with no surgical capability. Treated or stabilized patients are placed in individual patient protective wraps to prevent contamination while being transported to the next echelon of care.

c. Echelon 3. HSS at echelon 3 has surgical and holding capabilities for stabilization before further evacuation. This echelon includes medical assets external to the amphibious task force or landing force. Hospital ships (T-AH), combat zone (CBTZ) fleet hospitals, and in-theater naval hospitals comprise these assets. To function in a contaminated environment, echelon 3 facilities shall be protected and develop ambulatory and nonambulatory casualty decontamination stations. Additional requirements include staff decontamination stations with entry and exit airlocks and a CB detection capability to monitor the medical treatment areas for carry-over contaminants.

d. Echelon 4. Longer term definitive and specialized care is provided by echelon 4 facilities. These include out-of-theater naval hospitals or the communication zone (COMZ) fleet hospitals. These medical facilities should have CB agent monitoring capabilities for patients arriving from potentially contaminated areas or via contaminated modes of transport. Patients requiring further evacuation will go to continental United States (CONUS) or other out-of-theater echelon 4 hospitals. Echelon 4 medical facilities shall be protected in case they become echelon 3 support in a threat area.

e. Echelon 5. Provides full restorative and rehabilitative care to patients returning to CONUS.

2. Scenarios

a. General Conditions. In naval operations there are three environments; shipboard, fixed shore, and amphibious operations. Figures 2, 3, and 4 depict casualty flow and handling between each echelon in a contaminated environment. Naval operations present unique problems in that casualty flow may cross from one environment to another. Aggressive triage is required at all echelons to minimize bottlenecks at casualty decontamination stations.

b. Shipboard. Ships may become contaminated directly as a result of an actual hit or nearby airburst. They may also become contaminated indirectly by clouds of vapor or aerosols which drift offshore. As noted in figure 2, initial casualties, which will primarily be exposed deck personnel or personnel within spaces contaminated by penetrating chemical munitions, should be moved to a collection area where initial triage and hasty decontamination can be performed before transfer to the medical space. Aboard ships in a contaminated environment, without collective protection, medical treatment will be limited, but should include administration of additional atropine and intravenous fluids, splinting of limbs, and control of bleeding. Since all personnel are presumed to be in IPE, additional lifesaving procedures would require a compromise of the protective mask and overgarments

which would place both the patient and medical provider at significant risk. CRTS shall have protected medical spaces to treat casualties evacuated directly from contaminated environments. This is critical in the early days of an assault before establishing shore-based medical facilities.

c. Amphibious Operations. Figure 3 outlines the flow of casualties from the FLOT and the various echelons of medical care. Movement of the casualty may not progress through each echelon in sequence. Depending on the tactical situation and degree of air superiority, casualties may move from the FLOT directly to echelon 3 support by air. It is imperative echelon 3 facilities be able to treat CB casualties. Nonambulatory casualties should be placed in patient protective wraps before transfer between echelons.

d. Fixed Shore Installations. Figure 4 outlines the flow of casualties from the point of injury at a fixed installation through the various echelons of support. If a naval air station or naval shore facility comes under CB attack, mass casualties can be anticipated. Outlying clinics might function as echelon 2 support. Chemically-hardened hospitals or hospitals located in uncontaminated areas would serve as echelon 3 facilities. Movement of contaminated patients directly to echelon 3 facilities can be expected. For this reason, both echelon 2 and 3 facilities shall have protection and associated casualty decontamination systems.

ECHELONS OF CARE

ECHELONS	LEVELS OF MEDICAL CARE	RESOURCES
ECHELON 1	FIRST AID EMERGENCY MEDICAL CARE	SELF AID /BUDDY AID CORPSMAN AID STATION SHIP MEDICAL OFFICER
ECHELON 2	INITIAL RESUSCITATIVE CARE SURGICAL AND MEDICAL RESUSCITATION	MEDICAL BATTALION SHIPBOARD SURGICAL AND HOLDING CAP
ECHELON 3	RESUSCITATIVE CARE	HOSPITAL SHIP COMBAT ZONE FH RDMF
ECHELON 4	DEFINITIVE CARE	COMMZ FH OVERSEAS MTF
ECHELON 5	RESTORATIVE AND REHABILITATIVE CARE	CONUS MTF VETERANS HOSPITAL NDMS HOSPITALS

Figure 1
Enclosure (1)

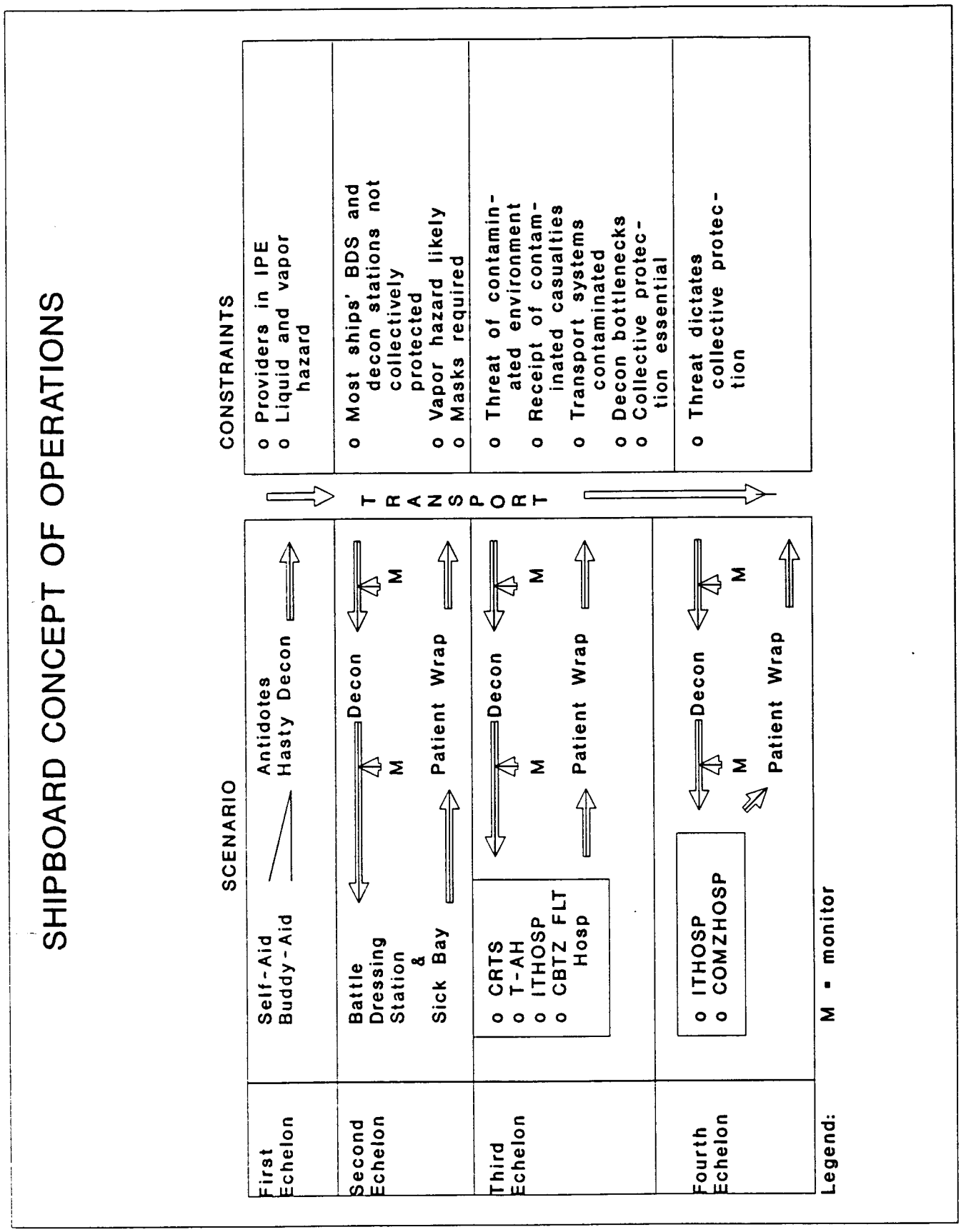

Figure 2
Enclosure (1)

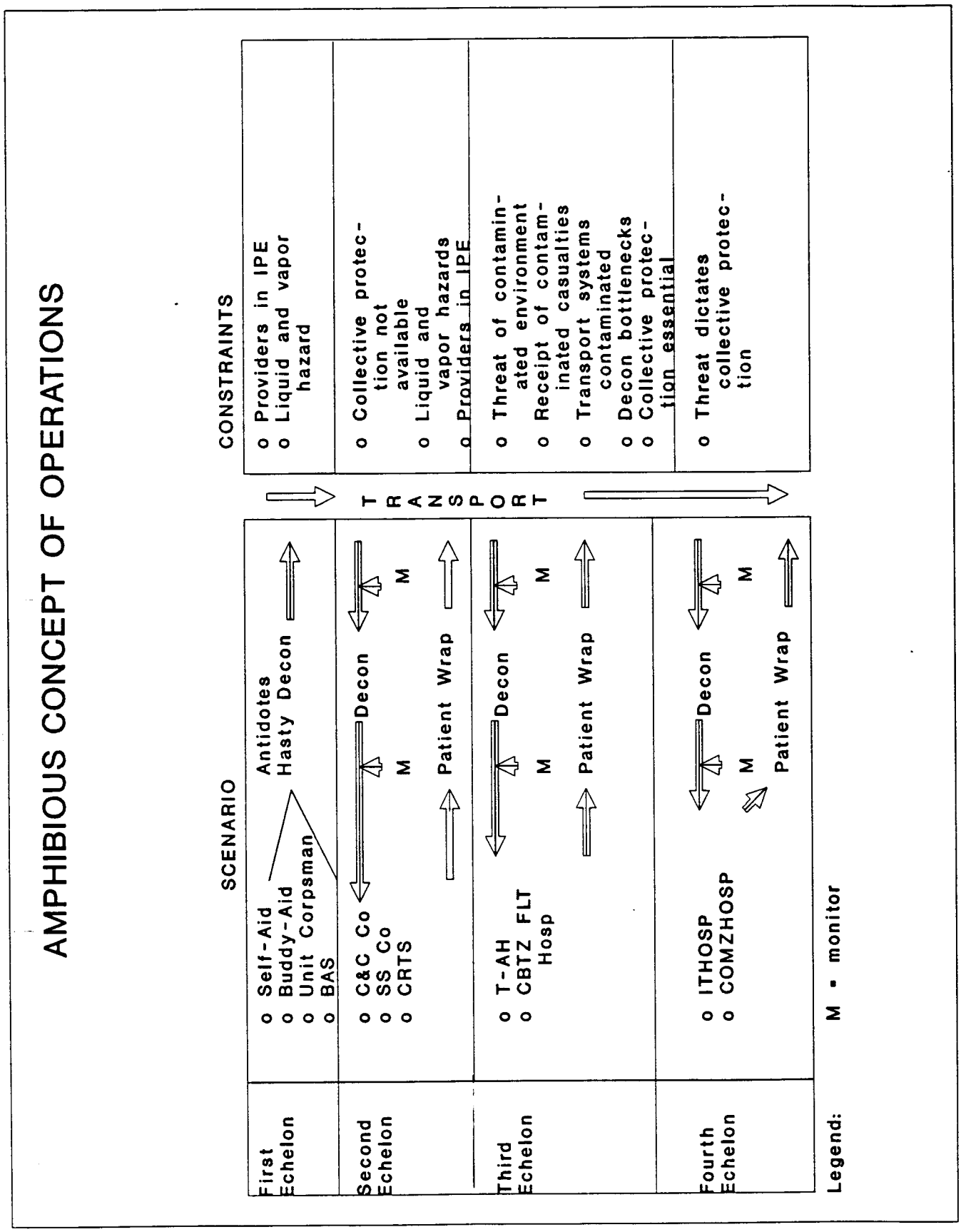

Figure 3
Enclosure (1)

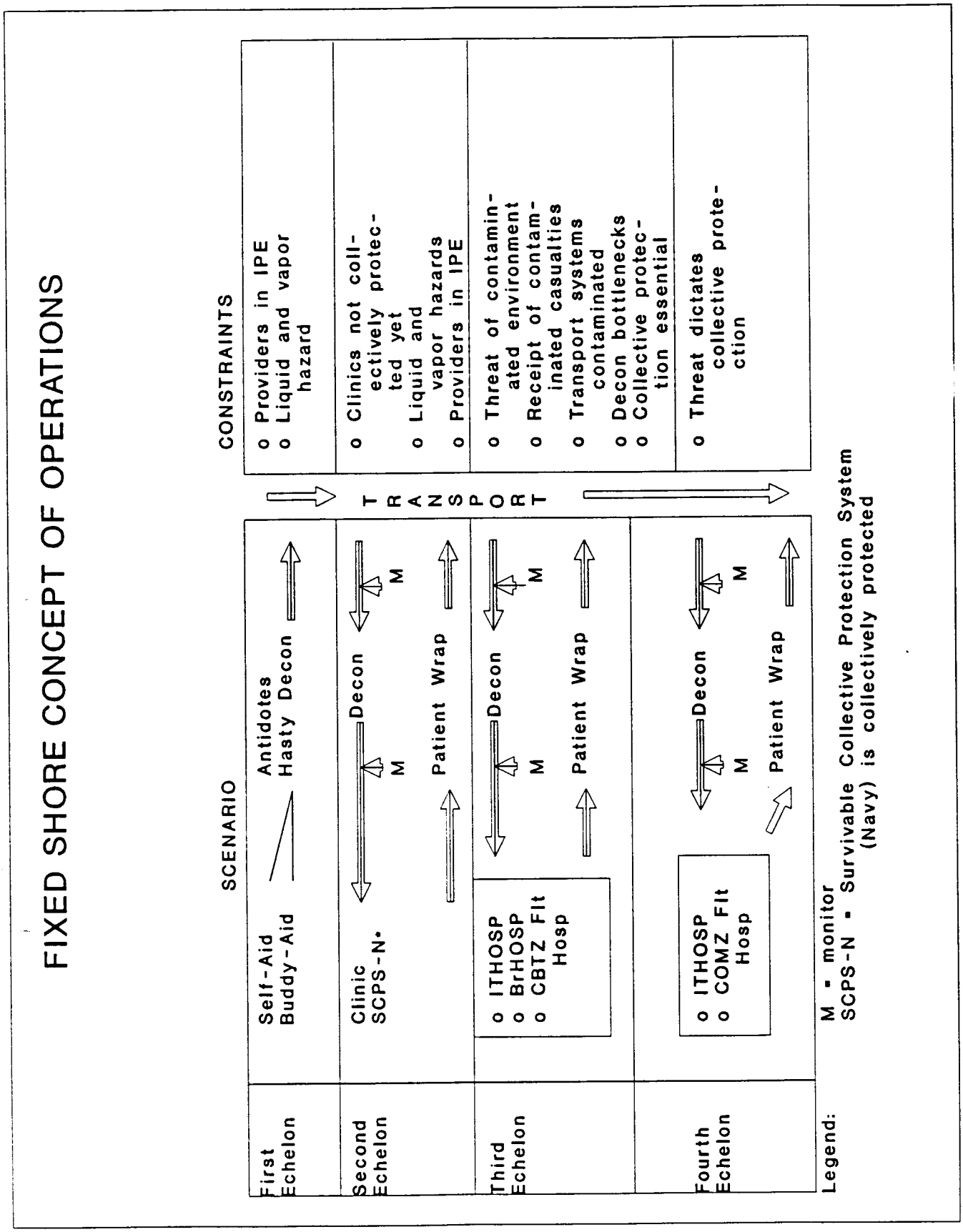

Figure 4
Enclosure (1)

CHEMICAL CASUALTY TRIAGE PROCEDURES

1. Condition. Patient holding or collection areas, such as beach evacuation stations, are planned and sized in consonance with theater evacuation policy and anticipated casualty estimates. During triage in a chemical environment, all casualties are in various levels of mission oriented protective posture (MOPP); medical and augment personnel are in MOPP Level 4, e.g., mask, protective overgarments, chemical protective gloves, and boots. All other ships' personnel and embarked troops are wearing masks alone or are in increased levels of MOPP. For information, the levels of MOPP are:

a. MOPP Level 0. Normal working uniform.

b. MOPP Level 1 (Suspected). MOPP suit (jacket and trousers) on, carry boots, gloves, and mask.

c. MOPP Level 2 (Possible). MOPP suit on, boots on, carry gloves, and mask.

d. MOPP Level 3 (Probable). MOPP suit on, boots on, mask (with hood) on, carry gloves.

e. MOPP Level 4 (Imminent). All MOPP equipment on.

2. Mask-Only Posture. The mask-only command may be given in the following situations:

a. Personnel are outside at MOPP 3 or MOPP 4, and a chemical attack has not occurred.

b. Sailors, outside of the skin of the ship, are at MOPP 4 and the ship is in a downwind vapor hazard area.

c. An attack has occurred, and the agent has been determined to be a nonpersistent vapor hazard.

3. Standard. Casualties are triaged expeditiously following the steps of performance.

4. Steps of Performance

a. Survey the casualty:

(1) Review the U.S. Field Medical Card (FMC) (DD-1380) if the casualty has one for:

(a) Type of agent (if known).

(b) Prior treatment including type and quantity of antidote administered.

(2) Evaluate the casualty's vital signs:

(a) Vital signs may be determined by making a small incision in the overgarment at the chest or back as appropriate, or such size to admit a stethoscope.

(b) Encapsulate the stethoscope head in a plastic bag and insert it through the slit to contact the chest or back.

(c) After listening to heart and respiratory sounds, the stethoscope may be removed, leaving the plastic bag in the slit to provide protection from contamination.

(3) Evaluate the casualty for conventional injuries to determine priority for:

(a) Emergency treatment.

(b) Decontamination of the patient.

(4) Check the casualty with or without conventional injuries for signs or symptoms of chemical agent poisoning. (See reference (b) for an indepth discussion of types of chemical agents, symptoms, and treatment.)

(a) Determine if the casualty can respond to a command.

1. Ask casualty to describe signs and symptoms.

2. Observe if the casualty responds in an orderly fashion when following simple directions.

(b) Observe the casualty for:

1. Localized sweating and muscle twitching.

2. Labored breathing, dyspnea.

3. Tearing.

4. Excessive salivation.

5. Vomiting.

6. Pinpoint pupils.

7. Strange or confused behavior.

8. Involuntary urination and defecation.

9. Convulsions.

10. Respiratory failure.

11. Anxiety.

b. Sort casualties into priorities for treatment. NATO triage categories are:

(1) Immediate. Includes those requiring emergency lifesaving treatment. Treatment should not be time-consuming or require numerous highly-trained personnel. The casualty should have a high probability of survival with therapy. Examples include gross external bleeding, sucking chest wound, flail chest, airway obstruction, tension pneumothorax, maxillofacial wounds, if asphyxia exists or is likely to occur, and patients with a pulse who have stopped breathing.

(2) Delayed. Includes patients badly in need of time-consuming major treatment, but whose general condition permits some delay in therapy without unduly endangering life. To mitigate the often critical effects of delay in treatment, sustaining treatment will be required. Examples include casualties exhibiting mild chemical agent symptoms who have received antidote and whose condition has stabilized.

(3) Minimal. Includes those patients with:

(a) Minor signs and symptoms who can care for themselves or who can be helped by untrained personnel. Examples include ambulatory casualties with minor wounds.

(b) Symptoms of mild chemical agent exposure not previously given antidote.

(c) Minor conventional wounds and no chemical agent exposure.

(d) Symptoms associated with side effects of nerve agent antidote and no symptoms of chemical agent poisoning.

(4) Expectant. Includes patients who have received serious and often multiple injuries, and whose treatment would be time-consuming and complicated with a low chance of survival. If fully treated, they make heavy demands on medical manpower and supplies. Until the mass casualty situation is under control, they will receive appropriate supportive treatment. The extent of treatment will depend on available capabilities of the medical unit and may involve the use of large doses of narcotic analge-

sics. These patients should not be abandoned, but every effort should be devoted to their comfort, and the possibility of survival, despite alarming injuries, always kept in mind. Examples include patients who have severe respiratory problems and weak pulse, or those who have no pulse, are not breathing, and have penetrating wounds of skull, chest, or abdomen.

c. Priority of emergency actions:

(1) Nonvesicant-contaminated casualties with other injury or illness resulting in respiratory difficulty, severe hemorrhage, or shock.

(a) Administer chemical agent antidote.

(b) Control of respiratory failure (assisted ventilation) and massive hemorrhage.

(c) Remove contaminated clothing and decontaminate the casualty.

(d) Administer additional emergency medical care and treatment for shock, wounds, and illnesses which are so severe that delay may endanger life or limb.

(e) Administer supportive medical care and treatment for less urgent wounds and other injuries and illnesses.

(f) Evacuate as soon as the patient is resuscitated and stabilized.

(2) Vesicant-contaminated, i.e., mustard/blister agent, casualties with traumatic injury or illness.

(a) Give lifesaving measures.

(b) Decontaminate the casualty as soon as the situation permits.

(3) Movement of casualties through the decontamination and evacuation systems must follow the priority of the triage categories.

DECONTAMINATION OF NONAMBULATORY CHEMICALLY CONTAMINATED CASUALTIES

1. Conditions

a. A nonambulatory casualty, in MOPP 4 or a patient protective wrap, who has been exposed to chemical agents with or without conventional injuries, is received at an echelon 2 or higher facility.

b. Decontamination teams consisting of nonmedical personnel are dressed in MOPP 4 with butyl rubber aprons at a shipboard contamination control area (CCA), or decontamination station (afloat and ashore), and supervised by a medical provider.

2. Standards. Decontaminate the nonambulatory casualty per steps of performance. (see enclosure (2), paragraph 4.)

3. Assumptions

a. All casualties received from areas where chemical or biological weapons have been employed shall be viewed as contaminated.

b. Medical care shall be provided in a toxic-free environment in either of the following:

(1) A collectively protected system.

(2) An uncontaminated area.

c. Medical units ashore and afloat can expect to receive contaminated casualties and shall be capable of chemical casualty decontamination.

d. Applicable NATO triage criteria (see enclosure (2), paragraph 4b) should be applied in preparing casualties for the decontamination process.

e. Decontamination teams shall consist of trained nonmedical personnel supervised by a medical provider.

4. Supplies. Stock CCA or decontamination station per table 1.

5. Decontamination Process

a. Stage I. Casualty Receiving Area (Liquid Hazard Area).

(1) Objective. Prepare the casualty for entry into the decontamination system.

(2) Staffing in MOPP Level 4

(a) Triage officer - 1

(b) Corpsman - 2

(c) Decon Personnel (nonmedical) - 2

(3) Steps of performance

(a) Remove all battle dress items and place in plastic bags.

(b) Remove all ordnance and weapons to designated area.

(c) Triage the casualty based on NATO criteria.

(d) Decontamination of masks and rubber gloves.

1. Decontaminate casualty's mask, using M291 decontamination kit.

2. Use a sponge damp with 1 percent sodium hypochlorite (HTH) solution to wipe mask lens (not entire mask).

Note: Do not let the HTH solution drip from the sponge or mask, since it may contaminate the neck area.

3. Wipe overboots thoroughly with 9 percent HTH solution.

4. Casualty with FMC is moved by stage I litter bearers to stage II.

b. Stage II. Overgarment Removal (Liquid Hazard Area).

(1) Objective. Remove the protective overgarment and avoid contamination of the casualty.

(2) Staffing in MOPP Level 4

(a) Senior corpsman (team leader) - 1

(b) Cutters (nonmedical) - 4

(3) Overview

(a) Cutters remove protective overgarments by cutting.

(b) Overgarment bagged and passed back to stage I.

(c) Place FMC in plastic bag and move with patient to stage III.

(d) Bandage, tourniquet, intravenous (IV), splints change, or decontaminate as needed.

(4) Preparation

(a) Decontaminate gloves, scissors, and work stands with 5 percent HTH solution.

(b) Bag and remove all clothing and equipment from the previous casualty.

(c) Corpsman attach FMC to casualty's mask. (Consider the FMC to be contaminated).

Note: If the collective protective system is equipped with communications between stages and the clean area, then the team leader will read from the card and a designated person in the clean area will transcribe the information onto a new card to await the arrival of the patient. Otherwise the card will be read in stage III and recorded by a designated person in stage IV.

(5) General Procedures

(a) Place the litter directly on the litter stand or stainless steel table.

(b) Stage II personnel gently pull the casualty off contaminated litter.

(c) Place casualty on clean litter or table.

(d) The team leader carefully stabilizes the casualty's head and neck during this transfer process.

(e) Two cutters begin at the feet by cutting the rubber overboots at the toe or heel (depending on whether the casualty is on his back or stomach).

(f) Once the overboot is open, pull the overgarment away from the innergarment and skin with one hand while cutting with the other hand.

(g) Cut up the leg of the outer trouser to the waist.

(h) The two remaining cutters cut up the sleeves of the overgarment to the collar hood opening, keeping the scissors clear of the innergarment and skin. Note: The rubber gloves are not cut or removed.

(i) Cut hood away. The hood will be integral with either the mask or the jacket of the overgarment.

1. Mask and hood combination.

a. Loosen all drawstrings and underarm straps.

b. Open "chin" zipper to the mask.

c. Cut through the zipper and around the mask inlets and eye pieces to the other side of the zipper completing a circle around the rubber portion of the mask. Note: Keep the scissors over the rubber portion of the mask and not on the skin of the casualty.

2. Integral hood and overgarment.

a. Release the drawstring and loosen the hood from the casualty's mask and head.

b. Cut down the top seam ensuring the scissors do not contact the hair or skin.

(j) When the hood is cut away, the other cutters cut up from the waist to the collar completing the cutting process.

(6) Medical Procedures

(a) Upon direction of the team leader, exterior bandages may be cut while cutting the suit or be cut around dependent on the wounds.

(b) The team leader assesses the type and extent of injuries and the need to replace bandages and tourniquets.

(c) Tourniquets

1. Place a new tourniquet 1/2- to 1-inch proximal to the old tourniquet.

2. Remove old tourniquet.

3. Decontaminate the skin around the wound with an M291 skin decontamination kit or a 0.5 percent aqueous hypochlorite solution.

(d) Bandages

1. Cut off old bandage.

2. Decontaminate the skin.

3. Replace the bandage if necessary to control bleeding.

(e) Splints and backboards. Remove and maintain body position.

(f) Contaminated tourniquets, bandages, and splints are bagged and discarded with the contaminated clothing.

(g) IV. Removal of IV bags and tubing is at the discretion of the team leader. Removal of IVs may be necessary to complete removal of the casualty from the overgarment. If the casualty can be disconnected temporarily without being placed at greater risk:

1. Clamp the tubing between the casualty and the bag.

2. Cut the tubing between the clamp and the bag; remove necessary garments; replace with clean bag and tubing; attach at entry part.

3. If the IV remains, the bag and the tubing shall be decontaminated by using an M291 Decontamination Kit before transfer to stage III.

(7) The cutters grasp the outergarment on the outside surface and pull flat under the casualty. Note: Do not touch the charcoal lining side of the overgarment. Contact should be made only on the outside of the overgarment to prevent contaminating the casualty.

(8) Remove the casualty's rubber gloves by pulling straight off by the fingers. All further handling of the casualty at this stage shall be done by grasping the casualty through the outside of the outergarment.

(9) Evaluate the casualty for possible contamination of the innergarments.

(a) Cut contaminated portions of innergarments away.

(b) Decontaminate the affected skin surfaces with M291, or 0.5 percent aqueous HTH solution.

(c) Use ABC-M8VGH detection paper to dab all areas of clothing. Pay particular attention to discolored areas, damp spots, tears in innergarment, and areas where outergarments may have been torn, wrists, and areas around bandages.

(d) Use scissors dipped in 0.5 percent aqueous HTH solution to cut away clothing with a large border around the contaminated area.

(e) Move the litter to a litter stand adjacent and parallel to the boundary between stage II and stage III where a clean litter is also placed.

(f) Transfer the casualty to stage III (only stage III personnel may touch patient).

(g) Stage II personnel bag the outergarments.

(h) Contaminated equipment, clothing, and other items are placed on the litter and removed.

(i) Stage II team decontaminates litter stands and their rubber gloves in preparation for the next patient.

c. Stage III. Innergarment Removal (Vapor Hazard Area)

(1) Objective. Remove innergarments to skin.

(2) Staffing in MOPP level 4

(a) Senior corpsman (team leader) - 1

(b) Cutters (nonmedical) - 4

(3) Overview

(a) Cutters remove innergarments.

(b) Inner clothing treated as contaminated.

(c) Bandage, tourniquet, IV, splints--change, or decontaminate as needed.

(d) Transfer to stage IV.

(4) Preparations

(a) All stage III cutters have decontaminated their gloves, scissors, and work stands with 5 percent aqueous HTH solution.

(b) All clothing from the previous casualty has been bagged for return to stage II.

(5) General Procedures

(a) The stage II team leader passes the casualty's treatment status and injuries to the stage III team leader.

(b) Apply bandages and tourniquets either before or during the innergarment cutting process depending on their location, nature of the injury, and the team leader's judgement.

(c) Remove innergarments by cutting.

(d) Cut boot or shoelaces and pull off boots.

(e) Clean wounds with sterile saline, betadine solution or soap, and sterile water.

(f) In the field, if the water supply is limited, remove dirt, debris, and blood only as necessary.

(g) The casualty is ready for transfer to stage IV. Note: Do not clean or decontaminate the casualty's mask.

d. Stage IV. Mask Removal (Toxic Free Area)

(1) Objective. Remove the mask and prepare the casualty for transfer to the toxic free area.

(2) Staffing

(a) Senior corpsman (team leader) - 1

(b) Corpsman (assistant) - 1

(c) Nonmedical assistant - 1

(d) MOPP Level - Modified 1. Mask only, apron optional.

(3) Steps of Performance

(a) Remove and bag mask.

(b) Pass bagged mask back to stage III.

(c) Transfer casualty to the toxic free area.

(4) Preparation

(a) Bag all items from previous casualty for transfer to stage III.

(b) CPS protected facility. No protective equipment is required for stage IV personnel.

(c) Non-CPS protected facility. Contingency may require the casualty and personnel in stage IV to wear protective masks.

(5) General Procedures

(a) Remove the mask immediately before transfer from stage III to stage IV.

(b) Place a plastic bag over the mask.

(c) Grasp the chin and remove the mask.

(d) Pass the bagged mask back to stage II.

(e) Pass the casualty to stage IV in a manner similar to that for stage II to stage III transfer. Note: Only stage IV personnel may touch the casualty.

TABLE 1
EQUIPMENT LIST, TYPICAL NON-CPS CCA AND DECONTAMINATION STATION
(PER 100 PERSONNEL PROCESSED)

Contamination Control Area

Qty	Item
4	M8 chemical agent detector paper
2	M256 chemical agent detector kits
20	M291, personal decontamination kits
40	Gls 5-15 percent 1 gallon bottles sodium hypochlorite (laundry bleach) or
48	6-ounce bottles calcium hypochlorite
1	1-gallon bottle general purpose cleaner or detergent
1	1-gallon bottle of detergent wetting agent
2	8-ounce measuring cups
10	Bandage scissors, angular 7 1/4-inch
3	Sponges
3	Deck brush
1	Stool (16-22 inches high)
25	50-gallon capacity plastic bags
25	Cotton twine or twist ties for bags
1	Boot wash pan (36" X 36" X 6")
2	5-gallon metal pails
5	35-gallon metal trash cans
1	Shallow metal pan (for scissors and gloves)
	Orange tape for marking areas

Decontamination Station

100	5 to 10-gallon capacity plastic bags
100	Towels
10	Bars soap (optional)

Medical Items

20	M291 skin decon kit
4	Gallons 0.5 percent solution of calcium hypochlorite
1	5-gallon metal pail
20	Bandages
20	Splints
2	Resuscitator hand power
50	Suction apparatus
20	Syringe hypodermic 10 or 12 ml
20	Atropine autoinjectors
20	2-PAM chloride autoinjectors
4	Airway, pharynx rubber, L & S
20	Infusion sets
20	Syringe hypodermic 50 mils
3	Bag, casualty, chemical

DECONTAMINATION OF AMBULATORY CHEMICALLY CONTAMINATED CASUALTIES

Specific procedures for decontamination of ambulatory personnel aboard ship in both CPS and non-CPS protected CCAs and decontamination stations are listed below and contained in section 10 of reference (d).

1. Condition. Given an ambulatory casualty, in Navy MOPP 4 who has been exposed to a chemical environment and has completed self- and buddy-aid. Shipboard decontamination personnel are in MOPP 4 with butyl rubber aprons at a CCA or decontamination station dedicated to casualties.

2. Standard. Decontaminate the ambulatory casualty per the steps of performance.

3. Steps of Performance

a. Route ambulatory casualty to the casualty CCA.

b. Decontaminate wet weather clothing and protective mask.

(1) Decontaminate wet weather clothing if worn. Sponge down with 5 percent solution of HTH or M291 decon kit starting with hood, then front and sides of casualty.

(2) Decontaminate protective mask

(a) Use M291 or 5 percent solution HTH.

(b) Cover air inlet with gauze or hand.

(c) Wipe external parts of mask.

(d) Uncover air inlet.

(3) Remove casualty's clothing and personal effects

(a) Remove personal articles from pockets

1. Place in plastic bags.

2. Seal bags and place in contaminated holding container.

(b) Cut around bandages and splints. Caution: Dip scissors in HTH solution after each cut.

(c) Cut clothing around tourniquets. Caution: Bandages required for severe bleeding are treated like tourniquets.

(4) Action if casualty has been triaged as needing clean treatment following decontamination of protective mask:

(a) Remove wet weather jacket

1. Unfasten jacket front.

2. Instruct casualty to face away from you and place feet about shoulder-width apart, extend arms backwards at about a 30-degree angle if possible, and clench fists.

3. Cut to aid removal if necessary

a. Cut around all splints, bandages, and tourniquets.

b. Cut sleeves from inside wrists to armpits.

c. Cut across shoulders through collar.

4. Standing behind casualty

a. Grasp jacket collar at sides of neck.

b. Peel jacket off shoulders at a 30-degree angle down and away from the casualty.

c. Smoothly pull the inside of the sleeves over the wrists and hands. Caution: Dip scissors in HTH solution after each cut.

d. Ensure the outside of the jacket does not touch the inner clothing.

e. Tell casualty to relax the arms and turn around without touching the trousers.

(b) Remove wet weather trousers

1. Unfasten or cut all ties, buttons, or zippers.

2. Cut trousers to aid removal. Note: Cut trousers only when necessary.

a. Cut around all bandages and tourniquets.

b. Cut from cuff along the inseam to waist on left leg.

c. Cut right leg from cuff to just below zipper and then intersect the first cut.

d. Allow trousers to fall to deck.

3. Grasp trousers at waist.

4. Peel trousers down over boots.

5. Step out of trousers.

(5) Check for contamination

(a) Use ABC-M8VGH detection paper.

(b) Dab all areas of clothing.

(c) Pay particular attention to:

1. Discolored areas.

2. Damp spots.

3. Tears.

4. Wrists.

5. Areas around dressings.

(d) Remove contamination

1. Cut away contaminated areas

a. Use scissors dipped in HTH solution.

b. Cut away clothing with a large border around the contaminated area.

2. Spot decontaminate with HTH or M291 kit.

(6) Recheck for contamination and decontaminate protective suit as required per step 3.

(7) Remove CBR protective suit

(a) Remove smock

1. Release all tabs on the waist.

2. Instruct casualty to face away from you.

3. Cut up the back of the smock to the neck area then through the hood just under the left ear.

4. Instruct casualty to face you.

5. With the left hand, reach up and take top of hood.

6. Pull away from casualty rotating material outward.

7. Rotate smock outward.

8. Instruct casualty to make a fist.

9. Pull smock off over gloves.

(b) Remove gloves

1. Dip your gloves in HTH solution.

2. Use your thumbs and forefingers of both hands:

a. Grasp the glove at the cuff on both sides of the wrist.

b. Peel glove off with a smooth downward motion.

c. Place gloves in contaminated disposal bag.

d. Instruct casualty not to let their hands touch their trousers.

(c) Remove trousers and overboots

1. Unfasten or cut all ties, buttons, or zippers.

2. Cut trousers to aid removal. Note: Cut trousers only when necessary.

a. Cut around all bandages and tourniquets.

b. Cut from cuff along inseam to waist on left leg.

c. Cut from cuff on right leg to just below zipper and then intersect the first cut.

d. Allow trousers to fall to deck.

3. Grasp trousers at waist.

4. Peel trousers down over the boots.

5. Direct casualty to sit on table.

6. Grasping the heel of the overboot with your hand and the top of the trouser leg with the other, pull off the garment.

7. Repeat step 4 for the other leg.

8. Instruct casualty to swing his or her legs over the table.

9. Route casualty to decontamination station via shuffle box filled with HTH.

(d) Remove glove liners. Casualty removes his or her own glove liners, if possible.

(e) Check for contamination. Use ABC-M8VGH detection paper. Test all areas of clothing and bandages; also neck and wrists.

(f) Spot decontaminate as required, after cutting away clothing, using M291 decon kit, HTH solution or soap and water as required.

(g) Remove or replace tourniquet

1. Remove clothing around tourniquet to allow placement of new tourniquet.

2. Place new tourniquet 1/2- to 1-inch above the old one.

3. Decontaminate the area.

(h) Remove splints

1. Remove splint carefully.

2. Decontaminate splinted area--use M291 or HTH solution.

3. Splints are normally replaced by the corpsman or doctor in sickbay or one of the battle dressing stations.

(i) Gently cut away bandages.

(j) Decontaminate areas covered by bandages.

1. Wash around wound with HTH solution.

2. Irrigate wound with sterile water or saline.

3. Cover wounds with plastic or plastic bags.

4. Secure plastic to casualty with tape.

5. Mark wound as contaminated per shipboard instruction.

6. Bandages usually will not be replaced outside sickbay or battle dressing station; however, be prepared to control hemorrhage when bandages are removed by reapplying clean bandages.

(k) Casualty will leave decon station via shuffle box filled with HTH and report to medical.

c. U.S. Marine Corps personnel decontamination standards are contained in reference (e).

d. Supplementary medical information

(1) Cut the clothing around tourniquets, bandages, or splints.

(2) Leave the tourniquet, bandages, or splints in place.

(3) After the overgarments and uniform are removed

(a) Tourniquets

1. Place a new tourniquet 1/2- to 1-inch proximal to the old tourniquet.

2. Remove old tourniquet.

3. Decontaminate the skin around the wound with an M291 skin decontamination kit or a 0.5 percent aqueous hypochlorite solution.

(b) Bandages

1. Cut off old bandage.

2. Decontaminate the skin as stated in paragraph 3d(3)(a)3 of this enclosure.

3. Replace the bandage if necessary to control severe bleeding.

(4) If the Triage Officer has directed that splints are not to be removed, decontaminate with a 0.5 percent aqueous hypochlorite solution.

(5) Contaminated tourniquets, bandages, and splints are bagged and disposed with the contaminated clothing.

MEDICATIONS MATRIX				
MEDICATION	NSN	STORAGE	SHELF LIFE	INDICATIONS
Betamethasone Valerate Cream USP, 0.1%, 45 GM, 1's	6505-00-107-0922	50-86°F	24 MOS	Erythema/Stinging caused by irritating agents
Codeine Sulfate Tablets, USP, 30mg, 100's	6505-00-118-2132	Controlled	36 MOS	Pain, discomfort, cough caused by choking agents
Chlorpromazine HCl Inj, USP, 25mg/ml, 2ml, 10's	6505-00-129-6709	50-86°F	36 MOS	Anxiety/erratic behavior caused by incapacitant agents
Diazepam Inj, USP, 5mg/ml, 2ml, Syringe-Needle Unit, 10's	6505-00-137-5891	Controlled	24 MOS	Convulsions caused by nerve agents
Atropine Sulfate Inj, USP, 2mg/ml, 25ml, 1's	6505-00-299-9673	50-86°F	36 MOS	Effects of nerve agent poisoning
Prednisone Tablets, USP, 5mg, 1000's	6505-00-530-6470	50-86°F	36 MOS	Inflammation and lung damage caused by choking agents
Sodium Sulfacetamide, Ophthalmic, 15%, 12's	6505-00-576-9112	2-8°C	36 MOS	Treatment of infected mustard burns of eye
Atropine Sulfate Ophthalmic Ointment, USP, 1%, 3.5gm, 12's	6505-00-926-1440	50-86°F	36 MOS	Ocular inflammation/symptoms caused by nerve/arsenical/ vesicant agents
Atropine Inj, (0.7ml Atropine equiv to 2mg Atropine Sulfate) in automatic injector, 1's (part of Mark I kit, NSN: 6505-01-174-9919)	6505-00-926-9083	50-86°F	60 MOS	Self/buddy aid for nerve agent poisoning
Fluocinolone Acetonide Cream, USP, 0.025%, 15gm, 1's	6505-00-985-7110	50-86°F	36 MOS	Erythema/stinging caused by irritating agents
Physostigmine Salicylate Inj, USP, 1mg/ml, 2ml, 12's	6505-01-026-8403	50-86°F	36 MOS	CNS effects caused by incapacitating agents
Trimethobenzamide HCl Inj, USP, 100mg/ml, 2ml, Syringe-Needle Unit, 25's	6505-01-048-0827	50-86°F	36 MOS	Vomiting and retching caused by vomiting or smoke agents
Dimercaprol Inj, USP, 100mg/ml, 3ml, 10's	6505-01-051-4831	50-86°F	36 MOS	Lewisite exposure
Pralidoxime Chloride (2-PamCl) Inj, USP, 1gm, 1's	6505-01-080-1986	50-86°F	36 MOS	Effects of nerve agent poisoning
Methylprednisolone Sodium Succinate Inj, USP, 1000mg, 1's	6505-01-108-0808	50-86°F	36 MOS	Inflammation caused by mustard or arsenical agents
Pralidoxime Chloride (2-PamCl) Inj, USP, 300 mg/ml, 2ml in automatic injector, 1's (part of Mark I kit, NSN: 6505-01-174-9919)	6505-01-125-3248	50-86°F	60 MOS	Self/buddy aid for nerve agent poisoning
Neomycin & Polymyxin B Sulfate and Dexamethasone Ointment, USP, Neomycin, 3.5 mg/g, Polymyxin B Sulfate 10,000 U/gm, & 0.1% Dexamethasone, 3.5 gm, 1's	6505-01-143-4642	50-86°F	30 MOS	Bacterial infection of the eye caused by mustard agent burns

MEDICATIONS MATRIX				
MEDICATION	NSN	STORAGE	SHELF LIFE	INDICATIONS
Pyridostigmine Bromide Tabs, USP, 30mg, blister pack of 21 tabs, 10's	6505-01-178-7903	50-86°F	60 MOS	Nerve agent pretreatment medication to enhance efficacy of nerve agent antidotes
Sodium Nitrite Inj, USP, 300mg, 10ml, 5's	6505-01-206-6009	50-86°F	Non-Deteriorative	Effects of cyanide (blood agent) poisoning
Sodium Thiosulfate Inj, USP, 12.5gm, 50ml, 5's	6505-01-206-6010	50-86°F	Non-Deteriorative	Effects of cyanide (blood agent) poisoning
Beclomethasone Dipropionate Inhalation Aerosol, USP, 17gm, 1's	6505-01-240-0587	<104°F	24 MOS	Symptoms of choking agents
Diazepam Inj, USP, 5mg/ml, 2ml in automatic injector, 15's (CANA)	6505-01-274-0951	Controlled	Undetermined	Buddy aid use for control of convulsions caused by nerve agents (not for self aid)