

MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE INSTRUCTOR GUIDE

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MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE INSTRUCTOR'S GUIDE

1. PURPOSE

This Field Training Exercise (FTX) was developed by the Chemical Casualty Care Division (CCCD) to accompany the Medical Management of Chemical and Biological Casualties Course (MCBC) when presented at the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD) and when presented as a three-day exportable course.

The goal of this exercise is to familiarize course attendees with: a) the proper use, capabilities, and limitations of military personal-protective, detection, and decontamination equipment; b) the processes necessary to manage contaminated casualties; and c) the challenges associated with the care of contaminated casualties.

Because this is a familiarization exercise, hands-on participation is encouraged, but attendee performance at the stations is not graded.

2. REFERENCES

Field Management of Chemical Casualties Handbook, Chemical Casualty Care Office, July 1996.

Medical Management of Chemical Casualties Handbook, 2nd ed., Chemical Casualty Care Office, September 1995.

FR. Sidell, et al, ed., Textbook of Military Medicine, Part I, Medical Aspects of Chemical and Biological Warfare, Office of the Surgeon General, Borden Institute, Washington D.C., 1997.

Soldier's Manual of Common Tasks, 91B.

3. SCOPE

This FTX is designed primarily for military physicians, nurses, and physician assistants. Civilian health care providers may also benefit from this exercise. Additionally, medical non-commissioned officers may benefit from the exercise, though they will already be familiar with parts of the FTX through Common Task Training.

4. APPLICABILITY

This training applies to all medical personnel caring for casualties of chemical warfare agents.

5. GENERAL GUIDELINES

The components of the exercise are the safety briefing, MOPP-donning drill, six teaching stations, and a post-exercise discussion of the triage-station mock casualties. The teaching stations include the following: triage, emergency medical treatment, litter-casualty decontamination, medical tasks, NBC tasks, and an optional demonstration or break station. Station-Instructor Guides (Appendix A) contain information about station set-up and equipment as well as major teaching points. Duplicate and distribute these guides to the station instructors.

The FTX is designed for classes of up to 180 students. This same design will work for even larger groups if extra stations are added. Each rotation takes about 30 minutes. Because the triage station is a timed exercise, the triage-station instructor should be tasked to signal the end of each rotation. The entire FTX should take no more than 3.5 hours.

Issue the "Student Guide to The Field Training Exercise" (Appendix B) to participants one or two days before the FTX. Review the student guide with the class on the afternoon before, or the morning of, the FTX.

a. Site Set-up

The list of equipment necessary for the FTX is at Appendix C. Nearly all the equipment required for this exercise can be found at a typical battalion aid station. This FTX may be executed indoors within an area the size of a basketball court if necessary. Stations may be set up in a circle or in two parallel lanes. The triage, EMT and litter-decontamination stations may be set up in a lane representing the basic layout of a typical casualty decontamination center.

b. Safety

The safety procedures followed when this FTX is held at USAMRICD are described in "Emergency Medical Service Standard Operating Procedures" (Appendix D). Use your local safety SOP when executing this FTX as part of an exportable course. The CCCD SOP may be used as a template for developing a locally applicable safety SOP.

Prior to the FTX, confirm that military participants have no medical profile(s) that would preclude wear of the protective mask and BDO. Civilian participants must be medically cleared to wear the protective mask for training. Request that civilian participants complete and return to the OIC the "Protective Mask/Respirator Medical Clearance Form" enclosed (Appendix E). The form includes a brief history and physical exam and requires a physician's signature to confirm that the participant is at low risk for medical problems associated with protective mask wear.

Uniform of the day will include canteen and web belt. Ensure that participants begin the exercise with a full canteen. Ensure that participants are told where to obtain additional water during the exercise.

At a minimum, the following issues should be discussed in a safety briefing presented just prior to the start of the FTX: 1) the potential for heat injury when wearing MOPP gear, 2) the importance of and the procedure for proper hydration, 3) the potential for sharps injury at the medical tasks station, 4) the procedure for reporting a true medical emergency during the FTX, 5) the necessity of wearing mask and gloves when activating the M256 detector ticket, 6) the requirement to wear gloves when handling M9 detector tape, and 7) the mandatory use of litter straps and the four-man carry when transporting mock casualties.

Directions for use of the Wet-Bulb Globe Thermometer (WBGT) are found at Appendix F. Use WBGT data to determine appropriate work-rest cycles during the FTX.

c. MOPP Donning Drill

The stepwise procedure for donning the protective mask and Battle Dress Overgarment (BDO) should be demonstrated to the group sometime during the course and/or just before the MOPP donning drill. Follow the procedure outlined in the Soldier's Manual of Common Tasks.

The class should be divided into six squads of equal or nearly equal size. One technique is to designate six squad leaders, place them into a file, and ask the class to fall in onto the squad leaders to form six equal ranks.

Once squads have been established, instruct the group to open ranks. Give the class 9 seconds to don the protective mask. Assess their performance. Then give the group an additional 8 minutes to don the remainder of the MOPP gear. Have station instructors available to monitor performance and assist class members who have difficulty completing the task. Remind class members to use the "buddy method" for donning the gear and checking for correctness of wear. When 8 minutes have elapsed, instructors should assess participants for proper wear of the MOPP ensemble.

For additional control during the FTX, squads may be identified by color. Following the MOPP donning drill, issue a different-color plastic tape to each squad leader and instruct the leaders to affix a strip of tape to the BDO sleeve of each squad member.

Then send each squad to one of the six stations. Participants should be allowed to remove their masks at the EMT station to facilitate discussion between instructor and students.

d. Triage-Casualty Discussion

When the FTX is complete, participants return to the classroom. The instructor(s) facilitates a structured class discussion of the triage station casualties. This discussion normally takes an hour.

6. LIST OF APPENDICES

Appendix A – Station-Instructor Guides

Triage Station

Emergency Medical Treatment Station

Litter-Decontamination Station

Medical Tasks Station

NBC Tasks Station

Station #6

Appendix B – Student Guide to The Field Training Exercise

Appendix C – Equipment List

Appendix D – Safety Standard Operating Procedures

Appendix E – Protective Mask/Respirator Medical Clearance Form

Appendix F – General Instructions, Wet Bulb-Globe Temperature Kit

Appendix G – Triage Exercise Casualty Scripts

Appendix H – Triage Exercise Note-Taking Outline

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
CASUALTIES COURSE**

FIELD TRAINING EXERCISE

APPENDIX A

STATION-INSTRUCTOR GUIDES

TRIAGE STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

For each of 12 simulated casualties, students are given two minutes to assess the casualty, determine a triage category, and recommend management. Students discuss their assessment and management recommendations for these casualties in the classroom following the FTX.

2. EQUIPMENT

- “Triage-Casualty Scripts” (Appendix G)
- 12 litters
- MOPP gear and protective masks for 12 mock casualties (if training MOPP is unavailable, casualties should wear at least the protective mask)
- Canteens and/or a water point for casualties
- One roll of M9 detector tape
- 12 blank Field Medical Cards (FMC)
- Note-taking outline (Appendix H): enough copies for each student in the class to record data on each casualty. Issue 3 two-sided copies per student.
- Sharpened pencils, one for each student in a rotation
- Moulage supplies: field dressing x 3, cravat x 3, splint x 1, blood simulant (e. g., “Karo” syrup with red food coloring added), red greasepaint or rouge, and red marking pen to add spots to M9 tape.
- Stopwatch or wristwatch with a second hand
- Bullhorn, whistle, or other signaling device to signal a station rotation (optional)

3. PERSONNEL

- 1 station instructor / timekeeper
- 12 volunteers to play mock casualties

4. SET UP

Issue training MOPP gear, a protective mask, and a different Triage-Casualty Script (Appendix G) to each of the 12 volunteers. The scripts include a scenario, the acting script, the type of moulage required, data for the FMC, and the answers to the problem. Casualties will require at least an hour to fill out their FMCs, don their MOPP gear, apply moulage, and learn their scripts.

Position the 12 litters on the ground in a large circle with enough space between litters to allow small groups of students to gather around each litter. Casualties will lie on the litters with their feet facing toward the center of the circle. Position casualties on the litters in sequence (casualty #1-12).

5. SAFETY

Ensure that the casualties have a ready source of water. Encourage them to rehydrate when not “performing” their scenarios for students. Provide casualties ready access to latrine facilities and permit them to take breaks, if necessary, when not performing their scenario.

Instruct casualties to dress comfortably under their BDO. On warm days, for instance, casualties should wear the PT uniform instead of the BDU under their BDO.

Advise casualties whose scenarios include “wandering around” not to resist the students’ attempts to return the casualty to a litter.

6. IMPORTANT POINTS

Issue a pencil and a set of note-taking outlines to each student at the beginning of the rotation. Give the following instructions to the students:

You will have 2 minutes to assess each of the 12 casualties. Sources of information about the casualty include the Field Medical Card, the patient’s history, and careful observation.

Casualties have been instructed not to offer information. You must ask the casualty for specific information about his/her condition. Do not attempt a physical examination. The Field Medical Card reflects the objective signs that should be present.

Moulage has been added as a prompt to indicate the existence of additional injury and does not necessarily represent the patient condition accurately.

The note-taking outline is supplied to help you organize your assessment of the casualty. Completion of the entire form for each casualty is not feasible during the two-minute evaluation period. However, since you will be asked to discuss each case following the FTX, make enough notes about each casualty to enable you to complete the form sometime before the beginning of the post-FTX discussion.

At the beginning of the exercise, divide the group into six 2- to 5-person teams. Position a team at each of the first six casualties. When the teams are positioned, start the clock and tell them to begin. After 1 minute and 45 seconds, tell the teams to stop and move to the next casualty. Give the teams 15 seconds to move to the next casualty; then start the clock again. The teams will rotate clockwise from one casualty to the next until each team has seen all 12 casualties.

When the teams complete the assessment of their last casualty, give the signal for all stations to rotate. Collect the pencils from the group and direct them to their next station. You may wish to give some signal to the other station instructors when 5 minutes or 2 minutes remain in a rotation.

Note: If, for example, there are 60 students in the class, there will be 10 students in each rotation. Two-person teams will start at each of the first five casualties. This means that each casualty will “perform” his/her scenario five times during each of six rotations and 30 times during the FTX. Increasing the size of the teams will reduce the workload for the casualties. However, with larger teams around each casualty, each individual student will find it more difficult to participate in the assessment. The FTX OIC should decide on the balance between team size and number of performances from each casualty. Do not position students at all 12 casualties at the beginning of the rotation. Casualties would then have no opportunity to take a break during the FTX.

EMERGENCY MEDICAL TREATMENT STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

- a. Review proper techniques for litter transport of casualties.
- b. Describe and discuss the "dirty EMT" station at a Casualty Decontamination Site including its purpose, personnel requirements, equipment available, and types of casualties seen at the station.
- c. A physician instructor facilitates discussion of the assessment, management, and disposition of a single casualty.

2. EQUIPMENT

- 1 litter with safety straps
- 2 litter stands
- Chemical-Agent Patient Treatment Medical Equipment Set for display (optional)
- Training MOPP and protective mask for mock casualty(s)

3. PERSONNEL

- 1 station instructor (optimally a physician or subject-matter expert)
- 1 or 2 volunteers as mock casualties (manikin may be substituted)

4. SET UP

Place the disassembled litter stands, the litter, and safety straps at the center of the station. The mock casualty in MOPP IV is placed on the ground some distance away from the station (within view and within 50 feet of the station).

5. SAFETY

Ensure that the casualty is safely placed on the litter, safety straps are properly used, the casualty is safely and properly transported, the litter team uses proper lifting techniques and commands, and the litter is safely positioned on litter stands (with the stands inside the litter stirrups). Use these issues as teaching points for Part 1, below.

6. IMPORTANT POINTS

PART 1

This station begins with a litter-casualty transport exercise to emphasize proper technique and difficulties associated with performance in MOPP gear. Ask the group leader to select a litter team to retrieve the casualty and another team to set up the litter stands. As the teams execute these tasks, monitor their performance for safety. When the tasks are complete (casualty properly positioned on the litter stands in front of the group) ask the group to critique the teams' performance. Briefly discuss the proper

technique for litter-casualty transport.

PART 2

Follow the litter-transport exercise with a brief discussion of the dirty EMT station at a Casualty Decontamination Site. Points to emphasize:

What categories of patient would be transported from the triage station to the EMT station? IMMEDIATE casualties requiring resuscitation and stabilization prior to decontamination and/or evacuation. MINIMAL casualties who can be easily treated and returned to duty without definitive decontamination at your Casualty Decon Site.

Who mans the EMT station? One or two medics at echelon I.

What type of treatment is rendered at this station? Simple resuscitative care (i.e. the “A-B-C-D-Ds”): management of Airway and Breathing, control of hemorrhage and replacement of circulating volume (Circulation), administration of antidotal Drugs (MARK I kit, CANA), and spot Decontamination.

What type of equipment is needed at this station? Oropharyngeal airways, ventilatory devices (bag-valve masks, Resuscitation Device, Individual, Chemical [RDIC]), IV therapy supplies (IV fluids, tubing, catheters, etc.), battle dressings, autoinjectors, M291 Skin Decontamination Kits, water, bleach. **Remember that any supplies and equipment prepositioned at this station must be used, decontaminated, or disposed of when operations at this site are completed. Therefore, do not position any durable equipment here that cannot be decontaminated. Do not pre-position 100% of the supplies that may be needed. Resupply from the clean side of the Hotline as necessary during operations.**

PART 3

The third exercise at this station is an instructor-facilitated student discussion of a chemical-casualty treatment scenario. Emphasis should be on a type of casualty that would be treated at the EMT station. Discussion should emphasize resuscitative care to be rendered soon after the exposure. The following is an example of a case scenario often used during the exercises presented at USAMRICD. However, only the imagination and expertise of the station instructor and the time allotted for the station rotation limit the type of casualty to be discussed and the points to be discussed. No moulage is required at this station; e.g., if the casualty would have a dressing, the instructor simply indicates where on the casualty the dressing would be.

Scenario: The casualty, in MOPP IV, arrives at the EMT station by litter. He is awake and responsive, but is obviously struggling to breathe. He is twitching all over. He retches intermittently. There is a bloody pressure-dressing on his right

thigh. The Field Medical Card reads “MARK I X one”. What is your course of action?

Include the “A-B-C-Ds” in your discussion:

AIRWAY/BREATHING – Since the casualty is struggling to breathe and possibly vomiting into the mask, can you effectively manage the airway if necessary? When and how can you manage the airway and ventilation of this casualty in protective mask? Is intubation an option? When and how?

CIRCULATION – The casualty could lose significant blood volume into the thigh from the thigh wound (especially if it is associated with a fractured femur). If students fail to assess circulation and proceed immediately to antidote administration, IM antidotes may not produce effective results due to hypoperfusion in the extremities. In addition, attempting positive-pressure ventilation in the setting of low circulating blood volume may inhibit venous return, exacerbate hypotension, and lead to cardiac arrest. Should an IV be started on this casualty in MOPP gear? When and how?

DRUGS – How many MARK I kits should be administered initially? This is clearly a severe exposure, so giving two or three MARK Is would be justified. Diazepam (CANA) should also be administered. How long must we wait to see an effect from the drugs administered? (5-10 minutes) What therapeutic effects are we seeking from each component of the kit? Atropine – drying of secretions, unlabored breathing. 2 PAM chloride – improved strength of skeletal muscles (most importantly, the diaphragm). Diazepam – prevention or treatment of seizures and convulsions. Could other routes of drug administration be used? Remember that IV administration of atropine in the setting of hypoxia could produce lethal dysrhythmias.

DECONTAMINATION – What is the likely state (liquid? vapor?) of the agent? Where on his or her body was this casualty exposed? (Liquid nerve agent on the BDO driven into the thigh wound by the penetrating missile fragment, but look for other possible sites of exposure and absorption). How does liquid exposure (vs. vapor) affect the onset, type and time course of symptoms? Is spot decontamination appropriate here? Should the wound be decontaminated? How?

LITTER-DECONTAMINATION STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

Demonstrate the step-by-step process for contaminated clothing removal and skin decontamination of a litter casualty.

2. EQUIPMENT

- 2 litters (preferably decontaminable litters) with safety straps
- 2 litter stands
- 4 utility pails (2 labeled "5% hypochlorite" and 2 labeled "0.5% hypochlorite")
- 4 sponges
- 2 large, bandage scissors
- 2 "J" Knives if available (knife - NSN 5110-00-524-6924, replacement blades - NSN 5110-00-098-4326)
- 4 butyl rubber aprons, Toxicological Agent Protective (TAP)
- 6 sets of training MOPP gear that can be cut from volunteer casualties or manikins

3. PERSONNEL

- 1 station instructor
- 2 volunteers or 6 manikins to simulate litter casualties

4. SET UP

Set up litter on litter stands. Hang a pail with a sponge inside on each of the four litter poles. Place a volunteer casualty or a manikin in MOPP IV onto the litter. Simulate decon using dry sponges or use water to simulate decon solution. Provide TAP aprons and either scissors or "J" knives for 4 volunteers from each rotation.

If manikins are used to simulate casualties, dress them in MOPP IV before the FTX begins. Adequate time to redress manikins is not available between rotations. If two volunteers are used as casualties, one volunteer acts as the casualty while the other suits up for the next rotation.

5. SAFETY

The casualty will be lifted from the litter by a minimum of three persons. Ensure that the largest/strongest person is positioned at the casualty's head/shoulders for the lift. Do not use large individuals (>90kg) as volunteer casualties.

Instruct casualties to wear a PT uniform rather than BDU under the BDO (to reduce heat stress and in case a student inadvertently cuts an extra layer of clothing when removing the BDO).

The “J” Knife, originally designed to cut seat belts during vehicle extrication, contains two razor blades and can produce serious injury if used carelessly or improperly. Instruct students to take special care when cutting the BDO with knife or scissors to avoid cutting underlying garments or the casualty.

Student-volunteers who don a TAP apron will rehydrate before proceeding to the next rotation.

6. IMPORTANT POINTS

Ask for four volunteers from each rotation group to execute the decon process as you describe the steps. While the decon process can be accomplished by two people, you will need a third person in TAP apron to execute a three-person lift of the casualty. When the decon volunteers lift the casualty after clothing removal, you or a fourth volunteer will remove the “contaminated” litter and clothing and place a clean litter on the stands.

Talk the decon volunteers through each step of the clothing removal and skin decon process. The steps of this process are detailed in the section "Litter Casualty Decontamination" of the Field Management of Chemical Casualties Handbook and is also described in Appendix A of the Medical Management of Chemical Casualties Handbook.

Remember that during actual decon operations only 0.5% bleach solution or plain water should be used on skin. A 5% solution may be used for equipment such as the mask.

MEDICAL TASKS STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

- a. Students practice the proper technique for using an autoinjector.
- b. Students in complete MOPP gear perform medical tasks that require fine-motor skills.

2. EQUIPMENT

Autoinjectors – If trainers are used, supply one MARK I Kit (trainer) for each student in a rotation. Trainers must be reset after they are “discharged”. The reset device is a small, black-plastic ring supplied with the trainer kits. If live (expired) MARK I Kits are used, provide one MARK I Kit for every two students in the FTX.

- 1 pair BDO trousers, rolled up, or covering a sandbag to simulate a casualty's thigh (if live autoinjectors are used)
- 1 sharps container (if live autoinjectors are used)
- Table (optional)

Intubation equipment – One or more intubation manikins. If more than one manikin is used, increase the numbers of the following items accordingly.

- 1 laryngoscope with functioning batteries
- 2 laryngoscope blades with functioning lamps (one Miller #2 or #3, one MacIntosh #3 or #4)
- 1 endotracheal tube, size 8.0 ID with functioning cuff
- 1 syringe, 10cc to inflate cuff
- 1 stylet
- Silicone spray to lubricate endotracheal tube (optional) (do not use KY® jelly or ointment as lubricant)
- 1 bag-valve-mask. Use the Resuscitation Device, Individual, Chemical (RDIC) if available.
- Table (optional)

Intravenous access equipment – One or more IV manikins (arm). If more than one manikin is used, increase the numbers of the following items accordingly.

- Intravenous catheters, 18 or 20 gauge, quantity sufficient to allow each student one or two insertion attempts
- 1 liter, 0.9% saline solution (do not use glucose-containing solutions in manikin)
- 1 liter, 0.9% saline solution with red food coloring added (blood simulant to fill veins of manikin)
- 2 IV tubing sets
- Alcohol prep pads, tape, tourniquet (optional) to add realism
- 1 sharps container
- Several pair of 7 mil, tactile, protective gloves
- Trash receptacle
- Table (optional)

3. PERSONNEL

- If MARK I trainers are used, one instructor can manage the station
- If live MARK Is are used, two instructors are required

4. SET UP

Autoinjectors – If trainers are used, students can activate the autoinjector against their own thighs or their buddy's thighs. If live autoinjectors are used, students can inject into a pair of rolled up BDO trousers or into a sandbag. For safety, do not permit students access to live autoinjectors until they are to perform the injection. Each student will discharge EITHER an atropine OR a 2-PAM Cl autoinjector. Provide a sharps container.

Intubation – Check the manikin, the laryngoscope/blade combination, and the endotracheal tube cuff/pilot balloon for proper function. Lubricate the endotracheal tube with silicone spray as necessary.

Intravenous access equipment – Connect an IV bag containing blood simulant to a manikin arm and fill the veins per manufacturer instructions. Set out IV-start equipment. Provide a sharps container and a trash receptacle.

All three skills (autoinjector, intubation, and IV) may be performed on the ground if necessary, since medical personnel may be required to perform these skills with the casualty lying on the ground. If tables are not used, you may wish to place the equipment on tarps or shelter halves. Provide adequate space between the three tasks and each manikin to allow students easy access and room to maneuver.

5. SAFETY

Autoinjectors (live) – Before beginning practice with live autoinjectors, warn students not to touch the needle end of the autoinjector (green end for atropine, black end for 2- PAM Cl). Instruct students to hold the autoinjector like a pen, between the thumb and index finger, and to brace the heel of the hand against the casualty's thigh while injecting.

Following an instructor demonstration of safe technique, students should step up to this station one at a time. Issue one autoinjector to the student. Closely supervise the student's technique as he/she injects the antidote into a BDO or sandbag. The student will place the discharged autoinjector immediately into a sharps container.

After the FTX, seal and dispose of sharps container per unit SOP. Any accidental needle sticks will be reported immediately to the FTX OIC.

IV access – Ensure the proper use of IV catheters. Do not permit students to recap needles. Needle should be placed immediately into sharps container following successful cannulation of vein. After the FTX, seal and dispose of the sharps container per unit SOP.

6. IMPORTANT POINTS

Autoinjectors – Demonstrate to the group the proper technique for using the autoinjector (see SAFETY section above). If trainers are used, students may then practice on their own. Monitor students to ensure proper technique. Assist them to reset the trainer as necessary.

If live MARK I Kits are used:

a. One student at a time will step forward to discharge EITHER an atropine OR a 2-PAM CI autoinjector into a sandbag or a rolled-up BDO under the close supervision of the station instructor.

b. Instruct the student to: 1) hold the autoinjector between his/her thumb and index finger (“like a pen”), 2) rest the heel of the hand against the “casualty’s” thigh, 3) push the tip of the injector against the thigh until it “fires”, 4) hold the injector against the thigh for 10 seconds to insure complete discharge of contents.

c. The student will then place the discharged autoinjector immediately into a sharps container.

Intubation/intravenous access – This station is NOT designed to teach students how to intubate or obtain IV access. This station is NOT designed to test or evaluate these skills. By practicing these tasks in MOPP IV, medical personnel already trained to intubate and/or start IVs can build confidence in their ability to perform critical, patient-care skills even in MOPP gear.

Encourage the students who know these skills to attempt them while in MOPP IV. Suggest that they first complete the task wearing the heavy, 25 mil gloves and that they then repeat the task wearing the tactile, 7 mil gloves.

Students normally complete the tasks at this station with time to spare before the next rotation.

NBC TASKS STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

Introduce students to the chemical detection, monitoring, and decontamination equipment most often used by medical personnel.

2. EQUIPMENT

- 1 roll, M9 Chemical Agent Detector Tape
- 1 book, M8 Chemical Agent Detector Paper, one book per student if possible
- M8A1 and/or M22 Automatic Chemical Agent Alarm
- M256 Tickets, one ticket for every one or two students if possible
- M291 Skin Decontamination Kit, one per student if possible
- Chemical Agent Monitor (CAM) or Improved Chemical Agent Monitor (ICAM) if available

3. PERSONNEL

This station should be managed by at least two persons to allow one instructor to rest while a second instructor is teaching.

Instructors familiar with the proper use of the above listed equipment should be tasked to present this station (e.g. Chemical NCO, 54B)

4. SET UP

Display equipment on a table or tables if available. If several instructors are available, you may choose to subdivide each rotation group to discuss more than one item at a time.

5. SAFETY

Gloves must be worn when handling M9 Tape.

Simulants are sometimes used to demonstrate the color change of M9 Tape and M8 Paper. For safety, simulants will not be used during the FTX at USAMRICD. If simulants are used, keep them away from students and follow the manufacturers' guidelines and precautions.

Do not activate M256 tickets in an enclosed space. The chemical protective mask and gloves must be worn when activating the M256 ticket. Students must be in MOPP IV if they are activating tickets.

6. IMPORTANT POINTS

M9 Detector Tape - Select one student as a demonstrator. After discussing the purpose of M9 tape, which agents it detects, and possible false positives, place M9 tape on the demonstrator's BDO in the proper locations. Stress that M9 Tape detects a potential liquid hazard only. It does not identify the specific class of agent and does not detect vapors. Do not touch the tape without wearing gloves. Do not permit students to touch the tape without wearing gloves.

Simulants are sometimes used to demonstrate the characteristic color change that occurs when M9 tape comes in contact with a possible nerve agent or vesicant. For safety, simulants are not used during the FTX at USAMRICD. Do not apply simulants to M9 tape that is already attached to a student or demonstrator's BDO.

M8 Detector Paper – Discuss the purpose and proper use of M8 Paper. Indicate possible false positives. Refer students to the color chart on the inside front cover of the M8 Paper book for the color change expected with each agent. Remind students that M8 Paper identifies only liquid hazards.

M8A1 or M22 Alarm – Discuss the purpose, the setup, and the proper use of system components. Indicate that the M8A1 detects only nerve agent vapor, whereas the M22 detects both nerve agent and vesicant vapor. Discuss possible false positives. Demonstrate the sound of the alarm.

M291 Skin Decontamination Kit – If adequate stock is available, issue an M291 SDK to each student. Discuss the purpose and proper use of the kit. Demonstrate and allow students to practice decontaminating their hands with the M291 SDK. For safety, do not require students to decontaminate their face. Instead, demonstrate (without using the actual kit) the technique for decontaminating the face, neck, and ears.

M256 ticket – Discuss the purpose of the M256 ticket and the agents it can identify. Indicate that the ticket identifies only vapor hazards, not liquids. Demonstrate the steps for proper use of the ticket. While it is not necessary to wait the specified time to complete each chemical reaction, indicate the waiting time for each step. If stock is available, issue a ticket to each student and allow the student to execute each step as it is demonstrated. Ensure that all students are in MOPP IV before beginning the process.

Chemical Agent Monitor – Discuss the purpose of the CAM and the agents it can identify. Indicate that the CAM detects only vapor and not liquid hazards. Demonstrate the basic steps required to prepare the CAM for operation. Demonstrate the basic operation of the CAM. Discuss possible false positives and typical problems with operator technique (e.g., interference from upwind vapors, scanning too quickly over the area to be sampled, saturating the detection cell, and contaminating the nozzle with liquid).

STATION #6 INSTRUCTOR'S GUIDE

The FOX Reconnaissance Vehicle is demonstrated at this station during the FTX at USAMRICD. This station may be used for static display of other equipment related to the management of chemical agent casualties (e.g., collective protection shelters, detection and monitoring equipment, etc.). The process of MOPP gear exchange may be demonstrated here.

Alternately, this station may be used as a rest-break area. The proper technique for drinking from a canteen while in MOPP IV may be demonstrated. Allow students to remove their mask and gloves and unzip their BDO jacket to cool down and rehydrate completely at this station.

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
CASUALTIES COURSE**

FIELD TRAINING EXERCISE

APPENDIX B

STUDENT GUIDE TO THE FIELD TRAINING EXERCISE

STUDENT GUIDE TO THE FIELD TRAINING EXERCISE

The goals of this exercise are: 1) to familiarize course attendees with personal protective equipment, its capabilities and limitations, and some of the challenges associated with casualty care in a contaminated environment and 2) to demonstrate the processes required to manage contaminated casualties.

The field training exercise (FTX) consists of six teaching stations: the casualty triage station, the emergency-medical-treatment (EMT) station, the litter-casualty decontamination station, the medical-tasks station, the NBC-tasks station, and an optional demonstration or break station.

As with any FTX, the first rule is safety. You will be in protective clothing during much of the exercise. The potential for heat injury exists. Bring a full canteen to the FTX site. You will be encouraged to drink water. If you start to feel light-headed, nauseated, weak, etc., notify your squad leader or the nearest instructor. Remove your mask, gloves, and blouse, and sit down in the shade. Each squad leader should ensure that each member of his or her squad maintains adequate hydration.

MOPP DONNING DRILL

When you arrive at the FTX site, there will be a short briefing and the class will be divided into squads. The briefing will be followed by a MOPP donning drill. You will be given eight (8) minutes to get into MOPP IV. There will be classroom instruction and practical exercises on MOPP donning prior to the FTX. It is very important that your mask fits properly. If it does not, your eyepieces may fog and you will be unable to see. If you have problems donning the protective gear, ask one of the instructors for help prior to the FTX.

The remainder of the FTX consists of six 30-minute stations. The FTX NCOIC will time the modules and announce rotations with a bullhorn or by blowing a whistle. Direct any questions you may have during the FTX to the individual station instructors.

STATION I, Triage:

There will be twelve simulated casualties at the triage station. You will be given two minutes to triage each casualty. The station instructor will announce rotation times.

You may obtain information about the casualty in three ways: 1) by reading the field medical card (FMC), 2) by taking a history (each casualty has a story, but the casualties are instructed not to offer information unless you ask), and 3) by observing the casualty's behavior and wounds. Remember, however, that none of the casualties are professional actors. The moulage is present only to prompt inquiry and is not designed to be a realistic representation of the casualty's wounds. Do not try to perform a physical examination or otherwise touch the patients.

You should take notes on your findings and planned interventions for each casualty. A note-taking outline will be issued at the start of the exercise. Keep your notes for reference during the triage-casualty discussion that follows the FTX.

The note-taking outline is supplied to help you organize your assessment of the casualty. Completion of the entire form for each casualty is not feasible during the two-minute evaluation period. However, since you will be asked to discuss each case following the FTX, make enough notes about each casualty to enable you to complete the form sometime before the beginning of the post-FTX discussion.

STATION II, Emergency Medical Treatment:

At this station, you will practice litter-carry in MOPP IV. The instructor will discuss the role of the dirty EMT station at a Casualty Decontamination Site. The instructor will also present a typical casualty scenario and facilitate a group discussion of that casualty's emergency management.

STATION III, Litter-Casualty Decontamination:

Decontamination of a litter casualty will be discussed and demonstrated. You may be asked to perform this task with the instructor's guidance. The overall setup of a casualty receiving and decontamination station will also be discussed at this site.

STATION IV, Medical Tasks:

You will be given the opportunity to accomplish a series of medically related tasks while in MOPP IV. The goal of this station is to give you confidence in your ability to accomplish tasks requiring fine-motor skill and coordination while wearing protective equipment. The tasks may include:

1. **IV administration** - Start an IV on a manikin.
2. **Endotracheal intubation** - Complete an endotracheal intubation on a manikin.
3. **Nerve Agent Antidote Kit (MARK I)** - Practice injection of a live (expired) or trainer autoinjector on a manikin. **WARNING:** Pay close attention to the station instructor. Live autoinjectors contain a spring-loaded needle!

NOTE: This station is not designed to teach you how to perform tasks 1 and 2. Non-clinicians may choose to complete only task 3 or may attempt the other tasks, with instruction, if time permits.

STATION V, NBC Tasks:

Simple methods of agent detection and personal decontamination will be demonstrated and practiced at this station. Demonstrated equipment may include:

1. **Chemical Agent Monitor (CAM)** - Proper use of the CAM will be demonstrated.
2. **M256 ticket (trainer)** - Proper use of the M256 detector ticket will be demonstrated and practiced using the trainer kit. (WARNING: use of the ticket, real or trainer, produces noxious vapor. The protective mask and gloves must be worn when using the ticket.)
3. **M8 paper** - The proper use of M8 paper will be demonstrated. The color reaction of M8 paper may be demonstrated using simulants.
4. **M9 tape** - Proper use of M9 detector tape will be demonstrated (WARNING: Do NOT handle M9 tape without gloves).
5. **M291 kit** - Proper use the M291 Skin Decontamination Kit will be demonstrated and practiced.

STATION VI, FOX Vehicle Demonstration

At the break area, a FOX (NBC Reconnaissance) vehicle will be on display. An instructor will be available to answer any questions you may have. You will also be given the opportunity to use the latrine and drink water at this station.

CLASSROOM DISCUSSION

Following the FTX, the class will discuss the medical management of the 12 triage-exercise casualties. The instructors will facilitate the discussion of each casualty, including the triage category, treatment, priority for decontamination and evacuation, and prognosis.

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
CASUALTIES COURSE**

FIELD TRAINING EXERCISE

APPENDIX C

EQUIPMENT LIST

FIELD TRAINING EXERCISE EQUIPMENT LIST

NOTE: See the “Equipment” section of each Station Instructor Guide to determine how the following equipment will be distributed and used.

- Training MOPP gear (protective mask, BDO jacket, BDO trousers, gloves, overboots) – one set for each student in the course
- 20 sets of MOPP gear for “casualties”, six of these sets to be cut off during the decon demonstration if possible
- Canteen and web belt for each student and each casualty
- 15 litters, decontaminable litters if available
- 4 litter straps (two pair)
- 4 litter stands (two pair)
- 4 butyl rubber aprons, Toxicological Agent Protective (TAP)
- 4 utility pails
- 4 cellulose sponges for litter-decon demonstration
- 4 large bandage scissors
- 2 “J” knives if possible – knife NSN 5110-00-524-6924, replacement blades NSN 5110-00-098-4326
- 2 rolls of M9 Chemical Agent Detector Tape
- 1 book of M8 Chemical Agent Detector Paper – one book per student if possible
- M256 Detector Tickets (training) – one ticket for each one or two students if possible
- M291 Skin Decontamination Kit – one kit for each student
- One M8A1 and/or M22 Automatic Chemical Agent Alarm system
- 1 Chemical agent Monitor (CAM) or Improved Chemical Agent Monitor (ICAM) if available
- 1 Chemical-Agent Patient Treatment Medical Equipment Set (MES) if available
- 12 blank, Field Medical Cards, DD Form 1360, December 1991
- Moulage supplies: field dressing x 3, cravat x 3, splint x 1, blood simulant (“Karo” syrup with red food coloring added), red greasepaint or rouge, red marking pen to add spots to M9 tape
- Sharpened pencils, one for each student in a rotation
- Stopwatch or wristwatch with a second hand
- Bullhorn, whistle or other signaling device to signal station rotations (optional)
- Triage-Casualty Scripts (Appendix G)
- Note-taking Outline (Appendix H) – enough copies for each student to record data on each of the twelve triage-exercise casualties (3, two-sided copies per student)

Autoinjectors – If trainers are used, supply one MARK I Kit (trainer) for each student in a rotation. Trainers must be reset after they are “discharged”. The reset device is a small, black-plastic ring supplied with the trainer kits. If live (expired) MARK I Kits are used, provide one MARK I Kit for every two students in the FTX.

- 1 pair BDO trousers, rolled up, or covering a sandbag to simulate a casualty’s thigh (if live autoinjectors are used)

- 1 sharps container (if live autoinjectors are used)
- Table (optional)

Intubation equipment – One or more intubation manikins. If more than one manikin is used, increase the numbers of the following items accordingly.

- 1 laryngoscope with functioning batteries
- 2 laryngoscope blades with functioning lamps (one Miller #2 or #3, one MacIntosh #3 or #4)
- 1 endotracheal tube, size 8.0 ID with functioning cuff
- 1 syringe, 10cc to inflate cuff
- 1 stylet
- Silicone spray to lubricate endotracheal tube (optional) (do not use KY® jelly or ointment as lubricant)
- 1 bag-valve-mask. Use the Resuscitation Device, Individual, Chemical (RDIC) if available.
- Table (optional)

Intravenous access equipment – One or more IV manikins (arm). If more than one manikin is used, increase the numbers of the following items accordingly.

- Intravenous catheters, 18 or 20 gauge, quantity sufficient to allow each student one or two insertion attempts
- 1 liter, 0.9% saline solution (do not use glucose-containing solutions in manikin)
- 1 liter, 0.9% saline solution with red food coloring added (blood simulant to fill veins of manikin)
- 2 IV tubing sets
- Alcohol prep pads, tape, tourniquet (optional) to add realism
- 1 sharps container
- Several pair of 7 mil, tactile, protective gloves
- Trash receptacle
- Table (optional)

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
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FIELD TRAINING EXERCISE

APPENDIX D

**SAFETY
STANDARD OPERATING PROCEDURES**

I. **Title:** Emergency Medical Service Standard Operating Procedures (SOP).

II. **Purpose:** To establish a Standard Operating Procedure in case of an environmental or traumatic emergency situation during a Field Training Exercise (FTX) in support of the Medical Management of Chemical and Biological Casualty Care Course (MCBC) and Field Management of Chemical and Biological Casualty Care Course (FCBC). This SOP will be used to facilitate emergency medical service for students or staff along with establishing guidelines to follow during a field training exercise.

III. **Applicability:** This SOP applies to all personnel participating in the MCBC and FCBC Course as instructors or as personnel providing administrative/logistical/medical support.

IV. **Definitions:**

- A. MOPP: Mission-Oriented Protective Posture, the term used to refer to the wearing of various combinations of chemical protective clothing and the chemical protective mask.
1. MOPP 1: Wear of the chemical protective overgarment, with mask slung at side and in its carrier.
 2. MOPP 2: Wear of the chemical protective overgarment (with mask slung at side and in its carrier) and the chemical protective boots.
 3. MOPP 3: Wear of the chemical protective overgarment, boots, and mask (mask is on face).
 4. MOPP 4: Wear of the chemical protective overgarment, boots, mask, and gloves.
- B. WBGT: Wet Bulb Globe Temperature, a means for determining a heat stress index called the Wet Bulb Globe Temperature Index (also WBGT), which takes into account the contributions to heat stress from ambient air temperature, humidity, air movement, and radiant heat.
1. For outdoor environments with a solar heat source,
 $WBGT = 0.7 NWB + 0.2 GT + 0.1 TA$, where
NWB is the temperature of the natural wet bulb,
GT is the temperature of the black globe, and
TA is the temperature of the dry bulb.
 2. For indoor environments (and for outdoor environments without a solar heat source),
 $WBGT = 0.7 NWB + 0.3 GT$.
 3. Either the WBGT Kit (NSN 6665-01-109-3246) or the WGT Kit ("Botsball"; NSN 6665-01-103-8547) will be used, but the WBGT calculation when using the WGT Botsball will be $WBGT = 0.8 WGT + 0.2 DB$, where
WGT is the WGT reading directly from the WGT Botsball and
DB is the dry-bulb temperature, obtained by removing the dial thermometer from the WGT Botsball, keeping the thermometer in the shade for 3 minutes, and then reading the air temperature from the dial thermometer (see Message SGPS-PSP, 23 May 1990; and Appendix B

[Work-rest and Water Consumption Tables] of USARIEM Technical Note 91-2).

4. WBGT measurements are to be made at a point 4 feet above ground level.

V. Responsibilities:

- A. The Course Director (normally Chief, Chemical Casualty Care Division) has the overall responsibility for the MCBC and FCBC and is responsible for the enforcement of this SOP during the Field Training Exercise and for ensuring that
 1. The Edgewood Area Health Clinic and Edgewood Emergency Medical Services are aware of the dates for the field training exercise (FTX) for the FCBC and MCBC.
 2. The planning of each course includes assurance that FTX stations will be arranged in such a manner to ensure that all FTX participants will have the recurring opportunity to remove their masks and achieve adequate hydration.
 3. A medical monitor responsible for the medical supervision of the FTX is present at all times during the FTX.
 4. At least one medic or physician responder, with aid bag, is at each FTX.
 5. The chain of command is notified at the earliest opportunity of any injuries that occurred during the FCBC and MCBC.
- B. The NCOIC of the Chemical Casualty Care Division or a designated representative is in charge of the FTX during the MCBC and FCBC and is responsible for ensuring that
 1. A cellular phone is maintained at the FTX to be utilized in the event of an emergency.
 2. All FTX participants receive instruction concerning safety issues (including heat-stress issues, work-rest cycles, procedures for adequate hydration, and methods for indicating true medical distress) and have the opportunity to ask questions and clarify safety instructions.
 3. All FTX participants have the opportunity to report in a confidential manner to the Course Director any medical conditions (including pregnancy) that may preclude full participation in the FTX.
 4. All FTX participants are briefed to communicate according to a standard signal all injuries or other relevant medical problems during the FTX.
 5. All FTX participants have full canteens at the beginning of each FTX.
 6. MOPP wear times, work-rest cycles, and hydration requirements indicated by WBGT considerations are observed by all participants.
 7. All medical emergencies are reported to the Course Director.

- C. The designated medical monitor on site during an FTX will be responsible for
1. Measuring and recording the Wet Bulb Globe Temperature at least every 25 minutes during the FTX.
 2. Ensuring that WBGT-dictated work-time information is communicated to FTX station leaders as indicated.
 3. Observing course attendees and casualties for evidence of traumatic injury, heat or cold injury, undue fatigue, and other medically relevant conditions.
 4. Notifying an MRICD medic or physician responder in the event that a course participant or casualty is in need of medical attention.
 5. Reporting all medical emergencies to the NCOIC of the Chemical Casualty Care Division.
- D. The responding MRICD medic or physician during an FTX will be responsible for
1. Remaining with the patient until EMS personnel respond on site.
 2. Reporting to the medical monitor that a medical emergency has occurred.
 3. As medically indicated, accompanying the patient to the Edgewood Clinic to assist and provide background information to the medical officer on duty at the clinic.
 4. As medically indicated, remaining with the patient until the individual is medically released by the Edgewood Clinic medical officer or transported to a Harford County hospital.
 5. Establishing at least telephonic contact with the Edgewood Health Clinic to determine disposition of the patient and to provide the clinic with a telephonic point of contact at USAMRICD.
 6. Establishing telephonic contact with hospital emergency-room staff when a patient is transported off the installation, and providing the hospital with a telephonic point of contact at USAMRICD.
- E. NCO/Officers in charge of individual stations at the FTX (FOX station, Patient Discussion, NBC, Decon, Triage, IV, Intubation, Blood Pressure, etc. will ensure that
1. As indicated by course design [see V. A. 2.], participants at the appropriate stations will remove their masks, drink water according to the guidelines in Appendix B (Work-rest and Water Consumption Tables) of USARIEM Technical Note 91-2, and refill their canteens before proceeding to the next station.
 2. In the case of a medical emergency, appropriate care is begun in the most expeditious manner possible and that the medical monitor is apprised of the situation.

VI. Materiel/Equipment to be used:

- A. Personal equipment for FTX participants.
 - 1. MOPP gear, masks, and carriers.
 - 2. Load-bearing-equipment (LBE)/pistol belt with water-filled canteens.
 - 3. M9 paper for application to outside of MOPP gear.

- B. FTX equipment.
 - 1. Station-specific equipment (e.g., intubation mannequins, IV lines and poles, sandbags, Mark I kits).
 - 2. Timer(s) for timing rotations
 - 3. Litters with straps.
 - 4. Moulage chest with moulage equipment, to include false-positive indicator (e.g., DEET) for M9 paper.

- C. Medical/communication equipment.
 - 1. Cellular phone.
 - 2. Copy of Appendix B of USARIEM Technical Note 91-2.
 - 3. At each no-mask station, opened containers of water for use by course attendees and station leaders.
 - 4. At the triage circle, an opened container of water with an adequate supply of paper cups.
 - 5. Aid bag containing at a minimum
 - a. Sphygmomanometer with stethoscope.
 - b. Epinephrine autoinjector (e.g., EpiPen).
 - c. Field dressings, including pressure bandages.
 - d. Airway-management equipment:
 - (1) 80- and 90-mm oropharyngeal airways.
 - (2) Tongue blades.
 - (3) Complete bag-valve-mask.
 - 6. Identification material for medical monitor and medic or physician responder(s).
 - 7. Signaling equipment as appropriate to report medical emergencies.
 - 8. WBGT [see IV. B. 3.] and table.

VII. Hazards involved:

- A. The primary hazard during the MCBC or FCBC FTX is heat injury from the heat stress associated with the wear of MOPP gear with or without the mask and associated with exertion during the exercise. The work intensity of activities performed in MOPP during the MCBC FTX by course attendees is not expected to exceed the “light” category in Table B-1 (Work Intensities of Military Tasks) of Appendix B (Work-rest and Water Consumption Tables) of USARIEM Technical Note 91-2, and the intensity of activities during the FCBC FTX by course attendees is not expected to exceed the “moderate” category in Table B-1 of USARIEM Technical Note 91-2. In neither the MCBC FTX nor the FCBC FTX is the work intensity of actors simulating casualties expected to exceed the “moderate” category in Table B-1 of USARIEM Technical Note 91-2. The protective-clothing status of all course participants will be assumed to fall into the category “BDO over DBDU” in Appendix B of USARIEM Technical Note 91-2.
1. To ensure a proper preventive posture relative to heat stress, the guidelines found in the work-rest and tables in Appendix B of USARIEM Technical Note 91-2 will be followed. For course attendees, the arrangement of FTX stations that include mask removal and hydration is such that at no point will the recommended maximal continuous work time for soldiers wearing BDO over DBDU and performing light work be exceeded. For actors simulating casualties, the arrangement of rest cycles for the actors will be such that at no time will the recommended maximal continuous work time for soldiers wearing BDO of DBDU and performing moderate work be exceeded.
 2. To ensure maximal hydration, course attendees at each station where the mask is to be removed will be instructed to drink in accordance with the guidelines in Appendix B (Work-rest and Water Consumption Tables) of USARIEM Technical Note 91-2 and to refill the canteen before proceeding to the next station.
- B. Potential but unlikely hazards of the FTX include skin exposure to M9 paper, which contains the mutagenic dye B-1. The risk of cold injury in MOPP is low. The risk of inhalational or skin exposure to insect repellent or other false-positive M9 indicators during the FTX is judged to be remote.

VIII. Safety Requirements:

- A. All FTX participants will be briefed on the following before participating in the FTX of the MCBC or FCBC:
1. Proper wear (including donning and removal) of chemical-protective clothing and the chemical-protective mask.
 2. Signs and symptoms of heat and cold injury and of dehydration.
 3. Preventive measures instituted concerning heat/cold injury and dehydration.
 4. Actions to be taken (including use of a standard distress signal and the identity of the medical monitor and of assigned medical responder[s]) in case of a medical emergency.
- B. Monitoring will be conducted by the medical monitor in accordance with Sections IV. B. and V. C. of this SOP.
- C. Emergency equipment will be constituted in accordance with Section VI. C. of this SOP.

- D. Special Precautions: Contractors or volunteers supporting the FTX are to read this SOP, indicate by their signatures their understanding of its contents, and be prepared to report to the medical monitor at the FTX any untoward medical events involving themselves or personnel under their supervision.

IX. **Procedures:** The FTX is to be conducted according to the specific guidelines in the FTX packets available from the Chemical Casualty Care Division.

X. **Emergency First Aid Treatment:**

- A. FTX participants with minor injuries or minor medical problems and judged by the medical responder to require further medical care will be transported by the safest and most expeditious means (litter, ambulance, other vehicle) to the Edgewood Area Occupational Health Clinic (Bldg. E-4110). FTX participants with severe injuries or illnesses will be treated on site until the arrival of an ambulance for transport to the Edgewood Area Occupational Health Clinic or to another medical facility as appropriate. In the case of serious injury or illness, the medical monitor is to use his or her cellular phone to dial 911 to report the emergency and request assistance.

- B. All injuries and illnesses will be reported to the on-site medical monitor regardless of the degree of injury. The medical monitor in turn will report the situation to the NCOIC of the FTX, who has the responsibility of notifying the Course Director. The Course Director will be responsible for the timely submission (within one working day) to the MRICD Safety Office of an accident report (STE Form 1416, "Record of Injury") in applicable cases and of timely notification of the Office of the Commander at USAMRICD of all serious injuries or illnesses occurring in association with the FTX.

C. Emergency Numbers

Chemical Casualty Care Office (Bldg. E-3106)	410-436-2230
Training Site Warehouse (Bldg. E-3083)	
Hoyle Gymnasium (Bldg. E-4210)	410-436-3375
Edgewood Medical Clinic (Bldg. E-4410)	410-436-3001
Military Police	410-436-2222/2125
Hazardous Waste (Bldg. E-4430)	410-436-3320/4429
Hospitals:	
Harford Memorial Hospital	410-939-2400
Fallston General Hospital	410-879-0500/877-3700
Walter Reed Army Medical Center	202-576-3501 [DSN 291]

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
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APPENDIX E

**PROTECTIVE MASK / RESPIRATOR
MEDICAL CLEARANCE FORM**

Part II (to be completed by the health-care provider):

1. **Blood pressure:**

a. Blood pressure (supine / sitting / standing) [please circle one]: _____ / _____ mm Hg

Additional measurements as indicated
[please specify position, body site (e.g., left arm), and circumstances]: _____ / _____ mm Hg

_____ / _____ mm Hg

_____ / _____ mm Hg

b. Is the diastolic blood pressure less than 100 mm Hg? **Yes** **No**

2. **Additional findings:** Additional relevant findings from history or physical examination:

3. **Additional testing needed:** Based upon my review of the preceding information and my evaluation of this prospective student, it is my professional opinion that her or she **does** / **does not** [please circle one] require further medical evaluation.

Further testing recommended: _____

4. **Respiratory clearance:**

The prospective student whose name appears on page 1 of this form **is** / **is not** [please circle one] cleared for the issue of a negative-pressure military chemical protective mask for training purposes only.

Name of approving physician: _____

Physician signature: _____

Date: _____

Location (city and state): _____

Note: The original of this medical screening-and-evaluation form shall be provided to the Chemical Casualty Care Division, USAMRICD, APG-EA, Maryland. Medical clearance is for the use of a negative-pressure military chemical protective mask for training purposes only and shall be effective for up to but not longer than one (1) year from the approval date indicated in section 4 of Part II of this form.

Privacy Act Statement:

Authority: 5 U.S.C., Section 301; 10 U.S.C., Section 3013

Purpose: This form is used to record student information in a form accessible to personnel entrusted with the safety of the training of students in chemical casualty care; information provided shall be made available only to a military physician assigned or attached to the Chemical Casualty Care Division, USAMRICD, APG-EA, MD and only for purposes of determining eligibility for field training involving a military chemical protective mask.

Disclosure: Personal information on this form is given on a voluntary basis. However, failure to provide this information may preclude participation in the Medical Management of Chemical and Biological Casualties Course (MCBC) or the Field Management of Chemical and Biological Casualties Course (FCBC).

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
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APPENDIX F

**GENERAL INSTRUCTIONS
WET BULB-GLOBE TEMPERATURE KIT**

GENERAL INSTRUCTIONS
WET BULB-GLOBE TEMPERATURE KIT NSN 6665-00-159-2218

A. The wet bulb-globe temperature kit is an instrument for providing information on hot weather risks to the health of troops undergoing training. The information is displayed on a scale in the form of an index, computed from the weighed readings obtained from three different thermometers.

1. A stationary wet bulb (WB) thermometer exposed to the sun and prevailing wind.
2. A similarly exposed "black globe" (BG) thermometer with a black sheath over the bulb. The sheath and bulb are inside a transparent perforated plastic shield.
3. A dry bulb (DB) thermometer with its bulb shielded from the direct rays of the sun by a shield painted white.

B. The wet bulb-globe temperature index (WBGT Index) is equal to 70% of the wet bulb (WB) temperature reading plus 20% of the black globe (BG) temperature reading plus 10% of the dry bulb (DB) temperature reading and can be computed as follows:

$$\text{WBGT Index} = 0.7 \text{ WB} + 0.2 \text{ BG} + 0.1 \text{ DB}$$

Use of the attached slide rule provides the correct WBGT Index automatically.

C. To use the WBGT Index as a control of physical activity, the following guidelines from TB-M.ED-175 are provided.

1. When the WBGT Index reaches 82, discretion should be used in planning exercise for unseasoned personnel.
2. When the WBGT Index reaches 85, strenuous exercises such as marching at standard cadence should be suspended for unseasoned personnel during their first three weeks of training. At this WBGT Index, training activities may be continued on a reduced scale after the second week of training.
3. Outdoor classes in the sun should be avoided when the WBGT Index exceeds 85.
4. When the WBGT Index reaches 88, strenuous exercise should be curtailed for all recruits and other trainees with less than 12 weeks training in hot weather. Hardened personnel after having been acclimatized each season, can carry on limited activity at WBGT indices of 88 to 90 for periods not exceeding six hours a day.

D. The WBGT Kit is enclosed in an aluminum case. The case is kept closed with a miniature stainless steel catch. The threaded hole in the bottom of the case is used to

attach the case to a standard lightweight photographers tripod that is not supplied with this kit.

1. The kit is opened by disengaging the catch and lifting the cover.
2. Lift the thermometer assembly up and out (See Figure 1).

NOTE: Examine the column of each thermometer. If the liquid has separated, heat the bulb slowly and carefully until the liquid reunites.

CAUTION: Never use a match or any kind of open flame to heat a thermometer bulb. Use a warm liquid only.

3. Wet the wet bulb wick thoroughly. NOTE: The wick is cotton and is 5-inches long with a knot 1-inch from one end. The end nearer the knot is pushed into the reservoir and the other end is slipped on the thermometer bulb (See Figure 1). The water reservoir should be filled with clear, preferably deionized or distilled water and utilized as indicated. The water should be changed daily and the wick washed with soap and rinsed thoroughly. To avoid error in the measurement of the wet bulb temperature, the water in the reservoir must be free of salt and soap.

4. Hold the kit with the thermometers toward the sun, with the -“black globe” thermometer closest to the sun. Wait 10 minutes for stabilization of temperatures.

5. Review the instructions on the right side of the slide rule (WET BULB-GLOBE TEMPERATURE INDEX CALCULATOR). Assume for purposes of instruction that the Black Globe (BG) temperature reading is 120, the Wet Bulb (WB) temperature reading is 80, and the Dry Bulb (DB) temperature is 100.

a. Move 80 on the Wet Bulb Temperature (WB TEMP) scale so that it is directly under 100 on the Dry Bulb Temperature (DB TEMP) scale.

b. Find 120 on the Black Globe Temperature (BC TEMP) scale.

c. Read Wet Bulb Globe Temperature Index (WBGT INDEX) at the Black Globe Temperature (BC TEMP).

d. If you have performed the slide rule movement correctly, the Index should read 90.

e. CAUTION: After use, empty the water reservoir to prevent wetting or rusting of parts in the kit.

f. The kit contains, in addition to the parts shown in Figure 1, the following spare components: 1 each transparent perforated plastic shield, 1 each water reservoir, 18 inch extra wick.

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
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APPENDIX G

**TRIAGE EXERCISE
CASUALTY SCRIPTS**

NOTE: Use the new version of the Field Medical Card, DD Form 1360, dated Dec 91.

CASUALTY 1

SUBJECTIVE:

Story:

About **6 hours ago** artillery shells started falling near your unit. The Individual Chemical Agent Detector (ICAD) worn by a U.S. Marine Corps liaison officer detected agent shortly after the attack began, and the alarm "GAS" was given. As you were putting on your MOPP gear, you realized that your mask was about 25 meters away. While running to get your mask, you fell face first into a puddle of what you thought was water with some motor oil in it. You wiped it off as well as he could with your sleeve before donning your mask but never used your M291 SDK. You stayed in your mask for 20 minutes and then left with other members of your unit on a patrol assignment. A half-hour into the patrol, the all-clear signal was given, and you and the other soldiers on patrol removed your masks.

About **2 to 3 hours ago**, your eyes became irritated. About **1 ½ to 2 hours ago**, your face began to burn and itch and your eyes began to hurt very badly. By about **1 hour ago**, your face was quite red and you could no longer see. At this time, you also noticed that your throat felt dry, scratchy, and sore and that it hurt especially when you coughed.

Acting:

You constantly complain of pain on your face and particularly in your eyes.

You also complain that you cannot see. You keep your eyes closed because it is too painful to open them. (If someone could open your eyes, you'd discover that you actually can see; but your face and eyes hurt so much that you won't let anyone touch them.)

If anyone tries to put your mask onto your face, you push him or her away; it hurts too much to have your face touched.

If specifically asked, you can admit that you have no problems breathing at this point but that you do have a sore throat and a mild hacking cough (cough occasionally but not too frequently; the coughing is not meant to stand out as a symptom).

OBJECTIVE:

Moulage:

You are in complete MOPP 4 except that your mask is by the side of your head instead of your wearing it.

You have M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has a few red spots on it.

Your face is reddened so that it looks as if you have a bad sunburn.

Field Medical Card:

Block 3: Place an X on the face and place an X in the block next to "burn/brûlure". Also, put a "?" in the box for "airway/trachée."

Block 4: Place an X in the box for "alert/alerte."

Block 5: Write "96 and strong" in this block.

Block 9: Write the following in this block:

Pain in the face and eyes (2-3 hours)

Can't see

Block 13: Write the following in this block:

Face burn.

Block 14: Write the following in this block:

No treatment given.

ASSESSMENT:

Agent:

Sulfur mustard

State:

Liquid (and vapor)

Body site:

Skin (from liquid); eyes (from vapor and perhaps liquid as well); respiratory tract (from vapor)

Effects:

Local

Severity of effects:

Moderate to severe

Time course:

Past: latent period; Present: getting worse; Future: likely to continue to get worse

Other diagnoses:

Sulfur-mustard vapor; underlying disease?; psychological considerations

Synergism:

Consider interactions between liquid and vapor mustard and also psychological overlay

TRIAGE:

Delayed (NOT immediate and NOT minimal).

ACTION AFTER TRIAGE:

If your respiratory status is judged to be stable enough to permit decontamination, you should proceed through a decon line relatively soon. Analgesics may be given. Because of the possibility that early intubation may be required, you should be watched carefully before, during, and after decontamination.

Consideration should be given to ambulatory rather than litter decontamination despite the loss of vision.

PROGNOSIS:

Your prognosis depends largely upon a) how severe the exposure to your respiratory tract was, b) whether your eye exposure was to mustard liquid or to vapor, and (to a lesser extent) c) the degree of systemic absorption of agent. You may go on to develop facial blisters or skin sloughing. The extent of involvement of your cornea and respiratory tract will be the major factors affecting when you can return to duty.

CASUALTY 2

SUBJECTIVE:

Story:

You had dismounted from your M2 Bradley Infantry Fighting Vehicle (BIFV) and were about 100 meters away when an enemy anti-armor round impacted on the driver's hatch about **2 hours ago**. The vehicle immediately caught fire, and you ran back to assist in rescuing a trapped crewman. You attempted to avoid the black smoke by crawling up the ramp. As you dragged the injured crewman from the vehicle you were overcome by the smoke and passed out.

When you regained consciousness, you were outside and short of breath, with a feeling of tightness in your chest. Also, your eyes were irritated and watery. You were ordered into MOPP 4 when your ambulance had to move through a contaminated area on the Main Supply Route (MSR). You are still having a hard time breathing, and it is increasingly difficult to get a good breath. However, your eyes are hardly irritated at all anymore.

Acting:

You should speak haltingly between short, choppy breaths. You have chest tightness and you are short of breath, and it is gradually getting harder to breathe. You cough lightly and only occasionally (not a deep cough).

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).

You have M9 detector paper on upper right arm, left wrist and right ankle. There are no spots on the M9 paper.

A small amount of black soot-like material (moulage) should be under your nose and below your mouth.

Field Medical Card:

Block 3: Circle the mouth and nose and write "soot" by the circle. Also, place a "?" in the box for "airway/trachée."

Block 4: Place an X in the box for "alert/alerte."

Block 5: Write "100" in this block.

Block 9: Write the following in this block:

Breathed smoke from vehicle hit by enemy fire.

Short of breath.

R 30 P100 SBP 134

ASSESSMENT:

Agent:

Perfluoroisobutylene (PFIB).

State:

Gas; solid for burning particles [see "other diagnoses"]

Body site:

Respiratory tract

Effects:

Local

Severity of effects:

Moderate to severe

Time course:

Past: short latent period; Present: getting worse; Future: pulmonary edema with or without

Other diagnoses:

Phosgene, NO_x, CO; burning particles; pre-existing medical condition?; psychological overlay.

Synergism:

Definitely possible

TRIAGE:

Expectant, although urgent evacuation should be considered if assets are available.

ACTION AFTER TRIAGE:

You should be checked for liquid contamination and for contamination by vapors of nerve-agent or vesicant. Neither liquid contamination nor nerve-agent/vesicant vapor contamination would be likely given your particular history, but they still need to be excluded. If there is no liquid contamination, proceeding through the entire decontamination process may not be necessary.

PROGNOSIS:

Your prognosis is poor. Because the latent period was so short as to be almost nonexistent, your chances of going on to develop fatal pulmonary edema (so-called dry-land drowning) are high. If your life can be saved at all, it will be by early evacuation rather than by any specific medical treatment provided to you at this echelon of care.

CASUALTY 3

SUBJECTIVE:

Story:

You are to be found wandering around unable to see. This means that in the triage exercise, whenever the signal to rotate is given, you get up and start wandering around with your hands in front of you so that the next group finds you walking around. You are not sure what happened to you. All you know is that you were on your way back from a neighboring unit in full MOPP 4 (there had been a chemical attack) when all of a sudden you couldn't see anymore. Your eyes are open, but everything is black. If asked when this happened, you ask what time it is now, think for a few seconds, and then estimate that you lost your sight about 1 hour ago.

Acting:

You are to be appropriately concerned, although not quite panicked, because you can't see. You therefore want to grab hold of the first person that comes by and make sure that he or she understands your problem and helps you. Although you are frightened to the point of panic, you are not confused or hallucinating. That is, if anyone asks you your name, the date, your unit, what you were doing, etc., you can give correct answers to all of these questions.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).
You have M9 detector paper on your upper right arm, left wrist and right ankle, but there are no spots on the M9 paper.
You have no paint or other moulage.

Field Medical Card:

Block 3: Write "no obvious injury" in the lower right-hand portion of this block.
Block 4: Place an X in the box for "alert/alerte."
Block 5: Write "74" in this block.
Block 9: Write the following in this block:
 Found wandering in the woods.
Block 13: Write the following in this block:
 Blind? Confused?
Block 14: Write the following in this block:
 No treatment given

ASSESSMENT:

<u>Agent:</u>	[None, although an incapacitating agent should at least be considered]
<u>State:</u>	N/A
<u>Body site:</u>	N/A
<u>Effects:</u>	N/A
<u>Severity of effects:</u>	N/A
<u>Time course:</u>	Not consistent with known chemical or biological agents
<u>Other diagnoses:</u>	Conversion reaction; malingering; trauma; cerebrovascular accident; methanol
<u>Synergism:</u>	Always possible when more than one diagnosis possible

TRIAGE:

Probably delayed, since "minimal" implies that you could treat yourself. However, neither should you simply be set aside: you should be treated according to the PIE principles: proximity, immediacy, and expectancy.

ACTION AFTER TRIAGE:

You should be directed to go to the ambulatory decon line despite your loss of vision.

PROGNOSIS:

Your prognosis is good if you are managed soon and close to your unit rather than being evacuated far to the rear.

CASUALTY 4

SUBJECTIVE:

Story:

You were hit in the left outer thigh with a bullet or shrapnel about **20 to 30 minutes ago**. A combat medic found you shortly afterwards and applied a pressure dressing to the wound. About **5 minutes ago**, you started twitching and shaking all over (your arms, your legs, and your trunk), developed a severe runny nose and secretions from your mouth and from inside your chest, began to have difficulty breathing, and started to retch.

Acting:

You are only semiconscious, but you can answer questions well enough to let students know what happened to you. Your breathing is rapid, and you answer questions between efforts to gasp for breath. Your arms, legs, and body twitch and shake uncontrollably. Feel free to let saliva drool out of your mouth (remember to clean your mask thoroughly with alcohol after this exercise!). Occasionally you start to rise up, turn over onto your side, lift up the bottom of your mask, and act as if you are throwing up. If you are asked, your leg hurts; but that's not nearly so distressing to you as your other symptoms, especially your difficulty in breathing.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).
You have M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots on it.
The upper-thigh area of the left pants leg of your BDO is torn and bloody.
You have a large bloody field dressing (pressure) on the wound.

Field Medical Card:

Block 3: Place X over the lateral (outer) aspect of the figure's left thigh and place an X in the box for "wound/blessure."

Block 4: Place an X in the box for "verbal response / réponse verbale."

Block 5: Write "116" in this block.

Block 9: Write the following in this block:

Leg pain (20 min)
Generalized twitching (5 min)
Secretions (5 min)
Retching (5 min)
Difficulty breathing (5 min)
P 110 SBP 120

Block 14: Write the following in this block:
Pressure dressing

ASSESSMENT:

<u>Agent:</u>	Nerve agent (one of the G agents or VX)
<u>State:</u>	Liquid
<u>Body site:</u>	The wound in the left thigh (parenteral absorption)
<u>Effects:</u>	Systemic
<u>Severity of effects:</u>	Severe
<u>Time course:</u>	Past: c/w high-dose liquid; Present: not getting better; Future: grim prognosis if no therapy
<u>Other diagnoses:</u>	Wound; other exposure sites; continuing absorption; medical conditions; psych overlay
<u>Synergism:</u>	Certainly between nerve-agent exposure and conventional wound

TRIAGE:

Immediate initially; if nerve-agent signs and symptoms resolve, watch for recurrence (from skin-penetration delay) and triage according to conventional wound (delayed).

ACTION AFTER TRIAGE:

You should be taken immediately to the emergency treatment area and given three Mark I kits followed by one diazepam autoinjector.

PROGNOSIS:

Your prognosis is good if you receive immediate treatment and are then observed for recurrence of your signs and symptoms.

CASUALTY 5

SUBJECTIVE:

Story:

You are a medic. About **15 to 20 minutes ago** you found casualty #4 with a leg wound and started to apply a pressure dressing to his leg. Because you had some difficulty performing this task, you took off your chemical protective gloves to work better. After dressing the wound, you wiped your hands on the dressing and put your gloves back on.

About **5 minutes ago** you began to feel uneasy, weak, and nauseated. You kept getting worse, and now you have great difficulty breathing. You are also twitching and shaking all over, retching, and have large amounts of secretions.

Acting:

You are only semiconscious, but you can answer questions well enough to let students know what happened to you.

Your breathing is rapid, and you answer questions between efforts to gasp for breath.

Your arms, legs, and body twitch and shake uncontrollably.

Feel free to let saliva drool out of your mouth (remember to clean your mask thoroughly with alcohol after this exercise!).

Occasionally you start to rise up, turn over onto your side, lift up the bottom of your mask, and act as if you are throwing up.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask and gloves).

You have M9 detector paper on your upper right arm, left wrist and right ankle, but there are no spots on the M9 paper.

You have no paint or other moulage.

Field Medical Card:

Block 1: Write "medic" in the specialty-code division of this block.

Block 3: Place an X in the box for "other/autre" and write "no obvious injury" in the area under the box.

Block 4: Place an X in the box for "verbal response / réponse verbale."

Block 5: Write "50" in this block.

Block 9: Write the following in this block:

Twitching (5 min)

Difficulty breathing (5 min)

Retching (5 min)

Secretions (5 min)

P 50 SBP 116

Block 14: Write the following in this block:

No treatment

ASSESSMENT:

Agent: Nerve agent (one of the G agents or VX)

State: Liquid

Body site: Hands (percutaneous absorption)

Effects: Systemic

Severity of effects: Severe

Time course: Past: c/w high-dose liquid; Present: not getting better; Future: grim prognosis if no treatment

Other diagnoses: Higher-than-expected dose before occlusion by gloves; medical condition(s); psych overlay

Synergism: Possible if other diagnoses exist

TRIAGE:

Immediate. Given the increased absorption because you put your gloves back on, a strong case could be made for expectant, but you are still potentially salvageable and should be treated as an immediate casualty.

ACTION AFTER TRIAGE:

You should be taken immediately to the emergency treatment area and given three Mark I kits followed by one diazepam autoinjector. You should also have your gloves removed and your hands decontaminated as soon as possible.

PROGNOSIS:

If you have not started to absorb an overwhelming amount of nerve agent, your prognosis with treatment is good.

CASUALTY 6

SUBJECTIVE:

Story:

You are found stumbling along a forest path with vomitus on the front of your BDU, which is partly unbuttoned (you feel hot, although you don't remember unbuttoning anything). Your mask carrier is open but empty (your mask and your autoinjectors are not there). You say in a quiet and softly slurred voice that you were running from a large tank and that you got sick from running too fast.

Acting:

You speak softly and with some slurring, as if you were very tired, even half-asleep. You answer questions in an almost dreamlike state. You are preoccupied with things that you obviously think that you see drifting in front of you, and your first priority is not volunteering information. If asked, you say that you are weak and tired. If asked about the tank, you say that the last time you checked, you had outwitted the tank but now are trying to get away from a HummVee. You say that you are hot, and you keep starting to take the rest of your BDU shirt off and then stop as if you had forgotten what you were going to do. Once in a while (but not too obviously), you pick some real or imaginary lint from your shirt and trousers—and occasionally from the air, too. If asked what you are picking from the air, you report something (dandelion seeds drifting by, big fluffy snowflakes, etc.) that you obviously think you see. If asked specifically about the sizes of the things in the air, you report that they're smaller now than they were a little while ago. If asked about your mask and autoinjectors, you say that you had to give them to a man who looked just like the Jolly Green Giant. If asked about your sight, you say that you are wearing rose-colored glasses.

OBJECTIVE:

Moulage:

You are at MOPP 0 (BDU with your mask carrier slung at your side) except that your mask and your autoinjectors are missing from your mask carrier.

Your BDU is partly unbuttoned, and you may (this is optional) have vomitus on front of your BDU and your T-shirt.

Your hands may be slightly reddened, but this is meant to be subtle. Don't overdo it.

Field Medical Card:

Block 3: Place an X in the box for "other/autre" and write "no obvious injury" in the area under the box.

Block 4: Place an X in the box for "verbal response / réponse verbale."

Block 5: Write "120" in this block.

Block 9: Write the following in this block:

Heat casualty?

Skin and mouth dry.

Red face.

Rash on hands.

T 100 P 120 BP 96/60

ASSESSMENT:

Agent:	Anticholinergic incapacitating agent such as BZ or Agent 15
State:	Solid (or solution)
Body site:	Unclear, but probably respiratory tract, GI tract, or skin
Effects:	Systemic
Severity of effects:	Moderate to severe
Time course:	Past: unknown; Present: unknown; Future: prolonged course
Other diagnoses:	Atropine overdose; heat injury; anxiety; psychosis
Synergism:	Possible if other diagnoses exist

TRIAGE:

Delayed.

ACTION AFTER TRIAGE:

Ambulatory decontamination if you are cooperative; otherwise, litter decontamination. Observation. You should be evacuated if you do not continue to improve or if your condition deteriorates.

PROGNOSIS:

Good as long as attention is paid to protecting you from yourself and from hyperthermia and as long as it is realized that you may become paranoid as your other symptoms begin to resolve.

CASUALTY 7

SUBJECTIVE:

Story:

While you were crawling through bushes and debris **6 hours ago**, you tore your left BDU and BDU sleeves. At the same time, a wet bush brushed the bare skin on your left forearm.

About an hour ago, the area started burning and itching. Now there is a 1" by 2" red area on your left forearm.

Acting:

Your skin burns and itches at the red spot on your left forearm.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).

You have M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots on it.

You have a 1x2-inch red spot on your left forearm

Field Medical Card:

Block 3: Place an X on the left forearm and an X in the box for "burn/brûlure".

Block 4: Place an X in the box for "alert/alerte."

Block 5: Write "94" in this block.

Block 9: Write the following in this block:

Red spot on arm.

Poison ivy?

P 94 SBP 138

COMPLAINTS:

Burning and itching at the red spot.

ASSESSMENT:

Agent:

Sulfur mustard

State:

Liquid

Body site:

Skin (percutaneous absorption)

Effects:

Local

Severity of effects:

Mild

Time course:

Past: latent period; Present: Progressive itching, burning, and redness; Future: Vesication

Other diagnoses:

Systemic absorption leading to delayed systemic effects; dermatitis; other sites; psych overlay

Synergism:

Possible if other diagnoses exist

TRIAGE:

Minimal.

ACTION AFTER TRIAGE:

You should be sent to the ambulatory-decontamination line.

PROGNOSIS:

You should be able to return to duty after receiving initial treatment and receiving medical evaluation and self-care guidance.

CASUALTY 8

SUBJECTIVE:

Story:

You were policing around the latrine about **3 days ago** when the M8A1 chemical alarm went off. While running to get your mask, you tripped and injured your right arm. You eventually found and donned your mask about **5 minutes later**, and you stayed in your mask until the all-clear signal was given about **30 minutes after the alarm had sounded**.

You felt very tired and weak **this morning** and had difficulty swallowing your food at breakfast (**8 hours ago**). You also noticed this morning that your vision had become blurry. **Since breakfast**, you have been feeling sick to your stomach. When you started having trouble breathing **1 hour ago**, you decided that you had better get medical attention. On your way to see your medic, you tripped and hurt your right ankle, which the medic wrapped and splinted before sending you on to see a physician.

Acting:

You breathe in rapid, shallow breaths.

Your speech is slurred and a little garbled.

Your right ankle hurts.

You feel very weak and tired. You're not really sleepy, but you can hardly keep your eyes open; they keep wanting to close.

You have a mild runny nose.

Your vision is somewhat blurry.

You still feel sick to your stomach.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).

You have M9 detector paper on your upper right arm, left wrist and right ankle, but there are no spots on the M9 paper.

Your right ankle is wrapped and splinted.

Field Medical Card:

Block 3: Place an X over the right ankle.

Also place an X in the box for "other/autre" and write "sprain? fracture?" in the area under the box.

Block 4: Place an X in the box for "verbal response / réponse verbale."

Block 5: Write "90" in this block.

Block 9: Write the following in this block:

Slight drooping of the eyelids

Dilated pupils

Difficulty swallowing and breathing

Nasal secretions

Blurred vision

R 24 P 90 SBP 100

(The above have progressed over the past 24 hours)

Block 13: Write the following in this block:

Ankle injury: sprain? fracture?

Block 14: Write the following in this block:

Ankle wrap and splint

ASSESSMENT:

Agent:

Botulinum toxin

State:

Probably aerosolized solid

Body site:

Probably respiratory tract (inhalation)

Effects:

Systemic

Severity of effects:

Moderate to severe

Time course:

Past: slowly progressive course; Present: continuing to progress; Future: paralysis likely

Other diagnoses:

Ankle injury; other toxin; pre-existing medical conditions; psychological component

Synergism:

Possible if other diagnoses exist

TRIAGE:

Delayed.

ACTION AFTER TRIAGE:

Your respiratory status should be evaluated, and if it is thought that you may need to be intubated within the next ten or fifteen minutes, you should be taken to the emergency treatment area rather than being sent to a decon line. If you stop breathing, you will need intubation and ventilation. You will also need botulinum antitoxin and an IV line. When you are stable, you should go through litter decon. The command should be notified of a suspected biological-agents attack.

PROGNOSIS:

You will almost certainly end up being intubated and requiring ventilation for a long time—perhaps several weeks. If such support is available, your long-term prognosis is excellent.

CASUALTY 9

SUBJECTIVE:

Story:

During a chemical attack **30 minutes ago**, you realized that you had left your protective mask about 100 yards away. While running to get the mask, you tripped and hurt your right wrist. At about the same time, you became short of breath and developed a runny nose, more than your usual amount of saliva, and dim vision. You donned your mask and gave yourself one Mark I kit.

Acting:

Your main complaint is pain in your right wrist; this is the reason that you came to get medical treatment. If you are specifically asked about your secretions and vision, you report that your runny nose and excess saliva have pretty much gone away, although things still look a little dark and your eyes hurt. You should breathe normally with an occasional deep breath.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).

You have M9 detector paper on your upper right arm, left wrist and right ankle, but there are no spots on the M9 paper.

You have no paint or other moulage.

Field Medical Card:

Block 3: Place an X on the right wrist.

Also place an X in the box for "other/autre" and write "sprain? fracture?" in the area under the box.

Block 4: Place an X in the box for "alert/alerte."

Block 5: Write "66" in this block.

Block 9: Write the following in this block:

Pain in right wrist

Some difficulty breathing

Dim vision

Salivation

Rhinorrhea

Pinpoint pupils

P 66 SBP 126

Block 14: Write the following in this block:

Mark I x 1

ASSESSMENT:

Agent: Nerve agent (G agent or VX)

State: Vapor

Body site: Respiratory tract (inhalation) and face (mainly ocular)

Effects: Local

Severity of effects: Mild

Time course: Past: fast onset c/w vapor; Present: getting better; Future: no worsening or recurrence

Other diagnoses: As-yet-undiagnosed liquid exposure; wrist injury; medical conditions; psychological overlay

Synergism: Possible but not likely to be significant in this case

TRIAGE:

Probably delayed (based upon the injury to the wrist).

ACTION AFTER TRIAGE:

You should be taken to a decon line (ambulatory vs. litter).

PROGNOSIS:

Your prognosis is excellent.

CASUALTY 10

NOTE: This casualty should be a male so that makeup can be applied to his chest, abdomen, back, and left arm.

SUBJECTIVE:

Story:

About **4 hours ago**, while your squad was at MOPP 1 with jackets unzipped, you were shot in your left upper arm. The force of the bullet ripped open the left sleeve of your MOPP jacket. As you tried to bandage your wound, you noticed that your chest, your abdomen, the left side of the upper portion of your back, and your left arm were covered with oily liquid. You therefore removed your BDO jacket and T-shirt and tried to wipe off the liquid using your T-shirt. After applying a crude bandage to your wound, you wiped your chest and your back with your M291 skin decontamination kit (SDK). This was about **15 minutes after you had been shot**. You then put on your extra BDO jacket. About **20 to 30 minutes ago**, your chest, abdomen, back, and left arm started to itch and burn. The itching and burning are like a bad sunburn and are getting worse.

Acting:

You are able to sit up and are reasonably comfortable except for the bad sunburn-like itching and burning of your chest, abdomen, back, and left arm. All of these areas are also quite tender. You have no difficulty breathing.

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask) except that your BDO jacket is open and you have no BDU shirt or undershirt.

You have M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots on it.

You have a bloody bandage on upper left arm.

The exposed skin of your chest, abdomen, back, and left arm are reddened as if by a bad sunburn.

Field Medical Card:

Block 3: Circle the chest, abdomen, upper back, and upper left arm.

Also place an X in the box for "burn/brûlure."

Block 4: Place an X in the box for "alert/alerte."

Block 5: Write "78" in this block.

Block 9: Write the following in this block:

Pain in left arm

Itching, burning, and redness of chest, abdomen, back, and left arm x 20-30 minutes

P 78 SBP 130

Block 13: Write the following in this block:

Arm wound

Block 14: Write the following in this block:

Field dressing

ASSESSMENT:

Agent:

Sulfur mustard

State:

Liquid

Body site:

Skin (percutaneous absorption)

Effects:

Local (skin) and probably also systemic (may not be seen for a week or so)

Severity of effects:

Mild to moderate (on skin); possibly severe systemically

Time course:

Past: latent period; Present: getting worse; Future: skin lesions and systemic effects

Other diagnoses:

Pre-existing medical conditions; psychological overlay

Synergism:

Possible with more than one diagnosis

TRIAGE:

Delayed or expectant.

ACTION AFTER TRIAGE:

You should be sent to ambulatory decon.

PROGNOSIS:

Your prognosis is guarded. Because of the extensive body surface area (BSA) over which absorption of mustard occurred, you may well go on to die in several weeks from sepsis, secondary infection, or other complications caused by mustard-induced bone-marrow suppression.

CASUALTY 11

SUBJECTIVE:

Story:

You are a combat lifesaver. About **20 minutes ago**, you were at MOPP 1 with your unit when one of the riflemen in your platoon was shot. With your field rucksack and a medical kit bag, you shouted encouragement to the wounded soldier, ran to him, applied a dressing to his wound, and then started dragging him to a casualty collection point 75 meters away across a field covered with dew. In the center of the field was a small creek, and as you carried the rifleman across the creek you had to pass through what appeared at the time to be low-lying fog on both sides of the creek. An ambulance had been prepositioned at the collection point and immediately transported both of you to your facility. The rifleman is awaiting triage nearby. You are still gulping air. You are coughing and sneezing, and you say (hoarsely) that you can't breathe properly. You are shaking all over and have a runny nose and tearing. You are starting to panic. You also appear to have been incontinent of urine.

Acting:

"What did I get into back there?" "Why can't I breathe?" You shake all over (partly from fright, partly from exhaustion) but without any violent movements (more like shivering). You also have nasal secretions and have to keep sniffing. In addition, your eyes burn and itch. In the heat of the moment you have forgotten, but if anyone asks specifically about any pre-existing medical conditions or about any recent illnesses, you realize that you cough and wheeze when you exercise, that you get really bad hay fever, and that you have had a headache and a cold for the last two days. You are short of breath and can't seem to stop coughing.

OBJECTIVE:

Moulage:

You are in MOPP 1 (including wearing a mask).

You have M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots on it.

You have no paint or other moulage.

Field Medical Card:

Block 3: Place an X over each eye and circle the face.
Also place an X in the box for "airway/trachée."

Block 4: Place an X in the box for "alert/alerte."

Block 5: Write "116" in this block.

Block 9: Write the following in this block:

Short of breath
Coughing and sneezing
Secretions
Twitching
Feels warm
R 30 P 116 SBP 136

ASSESSMENT:

Agent: Pulmonary agent vs. nerve agent vs. vesicant

State: Vapor, gas, liquid ("field"), or aerosol (the "fog") for agent(s); solid or aerosol for allergen(s)

Body site: Respiratory tract (inhalation) and skin (percutaneous absorption) most likely

Effects: Local in different organ systems vs. systemic

Severity of effects: Moderate

Time course: Past: c/w several diagnoses; Present: uncertain; Future: dependent upon diagnoses

Other diagnoses: Reactive airway disease and respiratory infection, allergy, and fear; false-positive M9 reaction

Synergism: Very likely

TRIAGE:

Most likely delayed.

ACTION AFTER TRIAGE:

You should go through ambulatory decontamination if you are able; otherwise, you should proceed to litter decontamination.

PROGNOSIS:

Your prognosis is good if no agent exposure occurred (use PIE); but observation and rest are necessary before excluding agent exposure.

CASUALTY 12

SUBJECTIVE:

Story:

You were shot in the abdomen **15 to 20 minutes ago**, and as you fell, liquid splashed onto your skin and into your wound through the hole in your BDO. A dressing was applied to the abdominal wound, and you now are twitching all over, retching/vomiting, drooling, and having secretions from your nose. Your breathing is getting worse, and you pass into and out of consciousness.

Acting:

Breathing with difficulty
Retching/vomiting
Twitching, generalized
Secretions, mouth and nose
Semi-conscious

OBJECTIVE:

Moulage:

You are in complete MOPP 4 (including wearing a mask).
You have M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots on it.
You have a large bloody dressing on your abdomen.

Field Medical Card:

Block 3: Place an X on the abdomen.
Block 4: Place an X in the box for "pain response/réponse à la douleur."
Block 5: Write "120-130" in this block.
Block 9: Write the following in this block:
 Retching
 Twitching (5-10 min)
 Difficulty breathing
 Secretions (5-10 min)
 P 120-130 SBP 90
Block 13: Write the following in this block:
 Abdominal wound (20 min)
 Pain in abdomen (20 min)
Block 14: Write the following in this block:
 Dressing on abdomen

ASSESSMENT:

Agent: Nerve agent (one of the G agents or VX)
State: Liquid
Body site: Skin (percutaneous absorption) and wound (parenteral absorption)
Effects: Systemic
Severity of effects: Severe
Time course: Past: c/w high-dose liquid exposure; Present: getting worse; Future: further deterioration
Other diagnoses: Conventional wound; pre-existing medical or surgical conditions; psychological considerations
Synergism: Definite adverse interaction between nerve-agent exposure and conventional wound

TRIAGE:

Expectant or immediate.

ACTION AFTER TRIAGE:

You should go to the emergency treatment area and receive all three of your own Mark I kits and one diazepam autoinjector. An IV should also be started, and spot decon of the skin as well as flushing of the abdominal wound should be attempted.

PROGNOSIS:

Your prognosis is poor, not just because of the abdominal wound or just because of the nerve-agent liquid on the skin and in the wound but also because of the interaction (synergism) between the chemical-agent insult and the conventional wound. The delay in receiving treatment may hasten your death, but in all likelihood you will in any case die from blood loss and from the amount (dose) of agent that is in the wound and that is being absorbed through the skin.

**MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL
CASUALTIES COURSE**

FIELD TRAINING EXERCISE

APPENDIX H

**TRIAGE EXERCISE
NOTE-TAKING OUTLINE**

NOTE: To print the following form, set printer on “landscape” mode.

PATIENT NO. _____

SUBJECTIVE (history / symptoms / treatment already given):

OBJECTIVE (signs):

ASSESSMENT / PLAN:

Agent(s): Type and toxicity (including LD₅₀) _____

State(s): Solid? Liquid? Gas? Vapor? Aerosol? _____

Body site(s): Where exposed / Route(s) of entry? [absorption] _____

Effects: Local? Systemic? [distribution] _____

Severity: Mild? Moderate? Severe? _____

Time course: Onset of symptoms? Getting better/worse? _____

Other diagnoses: Instead of? [DDx] In addition to? _____

Synergism: Combined effects of multiple exposures or insults? _____

DIAGNOSIS / DIAGNOSES:

TRIAGE CATEGORY (at initial presentation):

- Immediate Delayed Minimal Expectant

TREATMENT NEEDED PRIOR TO DECONTAMINATION:

DECONTAMINATION:

- Litter Ambulatory

EVACUATION PRIORITY:

- Urgent (2 hours) Priority (4 hours) Routine (24 hours)

TREATMENT NEEDED AFTER DECONTAMINATION OR EVACUATION:

PROGNOSIS:

PATIENT NO. _____

SUBJECTIVE (history / symptoms / treatment already given):

OBJECTIVE (signs):

ASSESSMENT / PLAN:

Agent(s): Type and toxicity (including LD₅₀) _____

State(s): Solid? Liquid? Gas? Vapor? Aerosol? _____

Body site(s): Where exposed / Route(s) of entry? [absorption] _____

Effects: Local? Systemic? [distribution] _____

Severity: Mild? Moderate? Severe? _____

Time course: Onset of symptoms? Getting better/worse? _____

Other diagnoses: Instead of? [DDx] In addition to? _____

Synergism: Combined effects of multiple exposures or insults? _____

DIAGNOSIS / DIAGNOSES:

TRIAGE CATEGORY (at initial presentation):

- Immediate Delayed Minimal Expectant

TREATMENT NEEDED PRIOR TO DECONTAMINATION:

DECONTAMINATION:

- Litter Ambulatory

EVACUATION PRIORITY:

- Urgent (2 hours) Priority (4 hours) Routine (24 hours)

TREATMENT NEEDED AFTER DECONTAMINATION OR EVACUATION:

PROGNOSIS: