

**UNITED STATES MARINE CORPS**  
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Training Command  
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ICS0802  
03 Sep 03

**STUDENT OUTLINE**

**NBC DECONTAMINATION AND FIRST AID**

**TERMINAL LEARNING OBJECTIVES**

(1) Given a list of choices, identify the procedures for individual decontamination of skin and individual equipment in accordance with MCWP 3-37.2. (MCCS.20.07)

(2) Given a list of choices, identify the procedure for providing first aid to a nerve agent casualty in accordance with MCRP 4-11.1A. (MCCS.20.11)

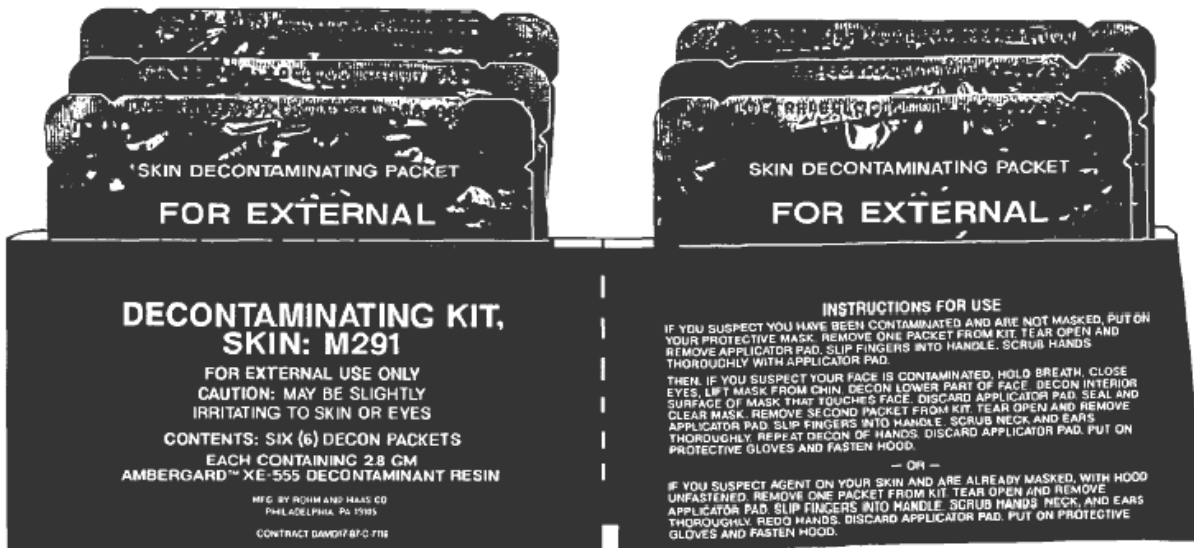
**ENABLING LEARNING OBJECTIVES**

(1) Given a list of choices, identify the procedures for decontaminating the skin using a M291 skin decontamination kit in accordance with MCWP 3-37.2. (MCCS.20.07a)

(2) Given a list of choices, identify the procedures for decontaminating individual equipment using the M295 individual equipment decontamination kit in accordance with MCWP 3-37.2. (MCCS.20.07b)

1. INDIVIDUAL DECONTAMINATION

a. M291 Skin Decontamination Kit (SDK). Use the M291 SDK to decontaminate skin that has been exposed to chemical contamination. The M291 SDK is stored in the individuals right cargo pocket of the Battle Dress Overgarment (BDO). Each kit consists of a flexible outer pouch containing six individual skin-decontaminating packets. Each packet consists of a foil-packaged, laminated fiber material containing a reactive resin. When used properly, the reactive resin, cloth-like applicator will neutralize the effects of the contamination on your skin. Prior to utilizing the M291 SDK, inspect the kit in the following manner:



- (1) Inspect the M291 SDK for loose black powder.
- (2) If no powder is detected, the kit is mission ready.
- (3) If powder is detected, inspect each packet for leaks.
- (4) Discard all leaking packets.
- (5) Reinsert good packets into the carrying pouch.
- (6) Verify that there are at least four skin-decontaminating packets in the kit. If there are less than four packets, request an additional kit, continuing to use your kit until all packets are gone. The packets are for external use only, and may be slightly irritating to the skin or eyes. Keep decontaminating powder out of eyes, cuts and wounds. Use water to wash toxic agent out of your eyes, cuts or wounds.

b. Performing Individual Decontamination. Decontaminate your skin with the M291 SDK within 1 minute of the suspected exposure. To conduct decontamination, perform the following steps:

- (1) Put on your mask and hood without zipping the hood, pulling the drawstrings on the hood, or fastening the shoulder straps on the hood.
- (2) Seek overhead cover for protection against further contamination.
- (3) Remove one skin-decontaminating packet from the carrying pouch.
- (4) Tear the packet open quickly at the notch.
- (5) Remove the applicator pad from the packet.
- (6) Discard the empty packet, observing litter discipline.
- (7) Open the applicator pad.
- (8) Unfold the applicator pad.

(9) Slip your finger(s) into the handle.

(10) Thoroughly scrub exposed skin on the back of your hand, palm, and fingers until completely covered with black powder from the applicator pad.

(11) Switch the applicator pad to the other hand, repeating the previous step on the other hand.

(12) Decontaminate your face and the inside of your mask in the following manner:

(a) Hold your breath.

(b) Close your eyes.

(c) Grasp the mask beneath your chin.

(d) Pull the hood and mask away from your chin enough to allow one hand between the mask and your face.

(e) Wipe up and down across your face, beginning at the front of one ear to your nose to other ear.

(f) Wipe across your face to the corner of your nose.

(g) Wipe extra strokes at the corner of your nose.

(h) Wipe across your nose and the tip of your nose to the other corner of your nose.

(i) Wipe extra strokes at the corner of your nose.

(j) Wipe across your face to the other ear.

(k) Wipe up and down across your face, beginning from the ear to your mouth to other end of the jawbone.

(l) Wipe across your cheek to the corner of your mouth.

(m) Wipe extra strokes at the corner of your mouth.

(n) Wipe across your closed mouth to the center of your upper lip.

(o) Wipe extra strokes above your upper lip.

(p) Wipe across your closed mouth to the other corner of your mouth.

(q) Wipe extra strokes at the corner of your mouth.

(r) Wipe across your cheek to the end of your jawbone.

(s) Wipe up and down across your face, beginning from your jawbone, to your chin and to the other end of your jawbone.

(t) Wipe across and under your jaw to your chin, cupping your chin.

(u) Wipe extra strokes at the center of your chin.

(v) Wipe across and under your jaw to end of your jawbone.

(13) Decontaminate the inside of your mask by turning your hand out and quickly wiping the inside of the mask that touches your face.

(14) Discard the applicator pad, employing litter discipline.

(15) Seal your mask.

(16) Clear your mask.

(17) Check your mask.

(18) Breathe.

(19) Remove the second packet from the carrying pouch.

(20) Tear open the packet quickly at the notch.

(21) Remove the applicator pad from the packet.

(22) Discard the empty packet, employing litter discipline.

(23) Open the applicator pad.

(24) Unfold the applicator pad.

(25) Slip your finger(s) into the handle.

(26) Scrub thoroughly the skin of your neck and ears without breaking the seal between your face and the mask until they are completely covered with black powder.

(27) Redo your hands until they are completely covered with black powder.

(28) Discard the applicator pad, employing litter discipline.

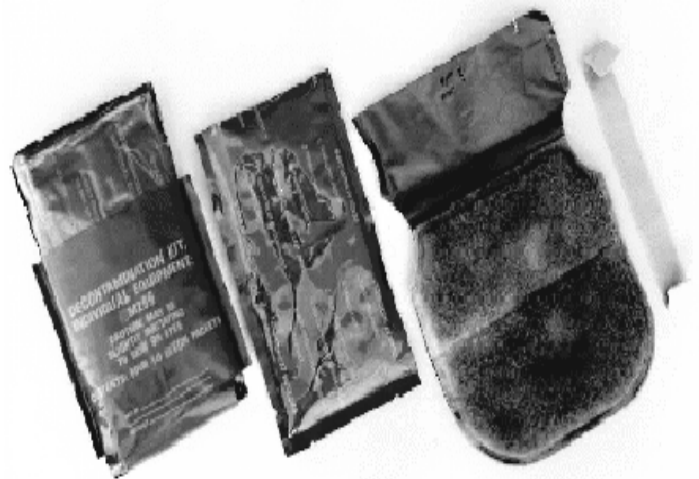
(29) Put on your protective gloves.

(30) Fasten the hood.

(31) Remove the powder with soap and water when operational conditions permit.

## 2. M295 INDIVIDUAL EQUIPMENT DECONTAMINATION KIT (IEDK)

The M295 IEDK is used to decontaminate equipment that has been exposed to chemical contamination. The M295 IEDK is stored in the individuals right cargo pocket of the Battle Dress Overgarment (BDO). You will use the M295 IEDK after you have decontaminated your skin and donned protective clothing to MOPP 4. Each kit consists of a flexible outer pouch containing six individual equipment-



decontaminating packets. Each packet consists of a foil-packaged, laminated

fiber material containing a reactive resin. When used properly, the reactive resin, cloth-like applicator will neutralize the effects of the contamination on your skin. The following are steps to perform when utilizing the IEDK:

a. Inspect the IEDK

- (1) Check for loose black (decontaminating) powder.
- (2) If no powder is detected, the kit is ready.
- (3) If powder is detected, inspect each packet for leaks.
- (4) Discard all leaking packets.
- (5) Verify that there are at least four decontaminating packets in the kit. If there are fewer than four decontaminating packets in the kit, request an additional kit.

b. Use the IEDK

- (1) Prepare the IEDK.
- (2) Remove one decontaminating packet from the kit.
- (3) Tear the packet at a notched edge.
- (4) Remove the pad applicator mitt.
- (5) Discard the foil packet, employing litter discipline.
- (6) Open the pad applicator mitt.
  - (a) Unfold the pad applicator mitt.
  - (b) Grasp the outside of the pad applicator mitt.
- (7) Decontaminate the glove for the hand with which you write.
- (8) Put on the decontaminated glove.
- (9) Insert the decontaminated gloved hand inside the pad applicator mitt, placing the resin pad in the palm side of the hand.
  - (10) Decontaminate your individual equipment by rubbing with the resin pad side of the pad applicator mitt, making sure you cover all areas thoroughly, especially areas which are hard to get into (e.g., cracks, crevices and other absorbent material). Decontaminate the following:
    - (a) Your other protective glove.
    - (b) Exposed areas of the mask and hood.
    - (c) Your weapon.
    - (d) Your helmet by patting the pad applicator mitt on the surface.
- (11) Discard the pad applicator mitt, employing litter discipline.
- (12) Get another packet

(13) Decontaminate the remainder of your individual equipment with the new packet.

(a) LBV and accessories (e.g., canteen, ammo pouch, first aid pouch, etc.).

(b) Mask carrying case.

(c) Protective boots.

(14) Repeat decontamination of the protective gloves.

(15) Discard the pad applicator mitt, employing litter discipline.

(16) Use another pad applicator mitt to decontaminate any areas where liquid agent is still suspected or detected.

(17) Repeat decontamination of the protective gloves.

(18) Discard the pad applicator mitt, employing litter discipline.

(19) Remember that the first and last items to decontaminate when utilizing the M295 IEDK are the gloves.

(20) Remove agent from weapons and LBV.

3. NERVE AGENTS. Nerve agents are colorless to light brown liquids. Some are volatile, while others are relatively non-volatile at room temperature. Most nerve agents are essentially odorless; however, some have a faint fruity odor. In toxic amounts, liquid solutions of nerve agents are tasteless. The G-agents tend to be non-persistent, whereas the V-agents are persistent. However, thickened non-persistent agents may present a hazard for an extended period. These agents are moderately soluble in water with slow hydrolysis. They are highly soluble in liquids and are rapidly inactivated by strong alkalis and chlorinating compounds (strong alkalis and chlorinating compounds are used for decontaminating equipment; in diluted formulas, chlorinating compounds are used for patient decontamination).

a. Symptoms of Nerve Agents. It is important that all Marines know the following mild and severe signs and symptoms of nerve agent poisoning. Service members who have most or all of the symptoms listed below must immediately receive first aid (self-aid or buddy aid) Casualties with mild symptoms may experience most or all of the following:

(1) Unexplained runny nose

(2) Unexplained sudden headache

(3) Sudden drooling

(4) Difficulty in seeing, dimness of vision and miosis (pinpointing of the pupils)

(5) Tightness in the chest or difficulty in breathing

(6) Wheezing and coughing

(7) Localized sweating and muscular twitching in the area of the contaminated skin.

(8) Stomach cramps.

(9) Nausea with or without vomiting.

(10) Tachycardia (increasing of the heart rate) followed by bradycardia (slowing of the heart to less than 50bpm)

b. Casualties with severe symptoms may experience most or all of the mild symptoms, plus most or all of the following:

(1) Strange or confused behavior

(2) Increased wheezing and increased dyspnea (difficulty in breathing)

(3) Severely pinpointed pupils

(4) Red eyes with tearing

(5) Vomiting

(6) Severe muscular twitching and general weakness

(7) Involuntary urination and defecation

(8) Convulsions

(9) Unconsciousness

(10) Respiratory failure

(11) Bradycardia

c. Casualties with severe symptoms will not be able to treat themselves and must receive prompt buddy aid and prompt follow-on medical treatment if they are to survive. Casualties with moderate poisoning will experience an increase in the severity of most or all of the mild symptoms. Especially prominent will be fatigue, weakness, and muscle fasciculation. The progress of symptoms from mild to moderate indicates either inadequate treatment or continuing exposure to the agent.

d. Prevention of Poisoning. The respiratory tract absorbs nerve agent vapor very rapidly. The protective mask must be put on immediately when it is suspected that nerve agent vapor is present in the air. Hold the breath until the mask is on, cleared, and checked. If the nerve agent concentration in the air is high, a few breaths may result in the inhalation of enough nerve agent to be incapacitating or even lethal. When the concentration in the air is low, a longer exposure may precede the onset of symptoms and the detection of nerve agent poisoning. Since the effects of a nerve agent are progressive and cumulative, the prevention of further absorption is urgent once symptoms have begun. Protective masks should be worn until the "all clear" signal is given.

e. Treatment of Nerve Agent Casualties

(1) NAPP (Nerve Agent Pyridostigmine Pretreatment)

(a) A pretreatment tablet designed to work with the NAAK MK1 will reduce the severity of effects, shortens the time needed for the NAAK MK1 to take effect and increases your survivability.

1. These pills are taken every eight (8) hours on the order of the commander.



### NAPP

2. The pills come in a blister pack with 21 tablets total. This is enough for 7 days if they are taken every eight hours.

3. These pills can cause side effects if taken too often or if more than 1 is taken every eight hours.

4. Instructions are very simple and printed on each pack.

(2) NAAK Mark I (Nerve Agent Antidote Kit Mark I). A set with 2 automatic injectors. One contains 2 mg of Atropine and one containing 600 mg of 2PAMCl.

- (a) Three kits issued to each Marine
- (b) A plastic clip holds the injectors together
- (c) Stored inside the mask carrier



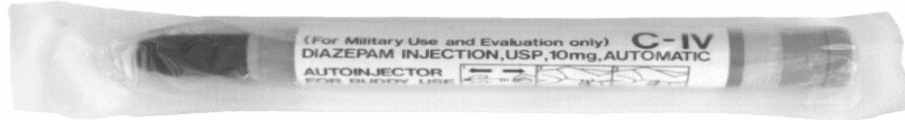
### NAAK Mark I

(3) CANA (Convulsion Antidote for Nerve Agents).



(a) Auto injector containing a 2-milliliter volume of Diazepam, an anti-convulsant.

(b) Used only for buddy aid, never for self-aid



#### CANA

f. Self-Aid. If you experience most or all of the mild symptoms of nerve agent poisoning, you should immediately hold your breath (do not inhale) and put on your protective mask. Then administer one set of MARK I injections into your lateral thigh muscle (or buttocks).

(1) Wait 10 to 15 minutes after giving yourself the first set of injections since it takes that long for the antidote to take effect. If you are able to ambulate, know who you are, and where you are, you will not need a second set of MARK I injections.

**WARNING: Giving yourself a second set of injections may create a nerve agent antidote overdose, which could result in incapacitation.**

(2) If symptoms of nerve agent poisoning are not relieved after administering one set of MARK I injections, seek someone else to check your symptoms. A buddy must administer the second and third sets of injections, if needed.

g. Buddy Aid. If you encounter a Marine suffering from severe signs of nerve agent poisoning, render the following aid:

(1) Mark the casualty, if necessary. Do not fasten the hood.

(2) Administer, in rapid succession, three sets of the MARK I.

NOTE: Use the casualty's own antidote auto-injectors when providing aid. Do not use your injectors on a casualty. If you do, you may not have any antidote available when needed for self-aid.

4. BLOOD AGENTS. Blood agents produce their effects by interfering with oxygen utilization at the cellular level. Inhalation is the usual route of entry. Hydrogen cyanide (AC) and cyanogen chloride (CK) are the important agents in this group. Cyanogen chloride also has a choking effect. These agents can be dispersed by artillery shell, mortar shell, rocket, aircraft spray, and bomb. All blood agents are non-persistent.

a. Symptoms of Poisoning. The symptoms of Hydrogen Cyanide (AC) depend upon the agent concentration and the duration of exposure. Typically, either death occurs rapidly or recovery takes place within a few minutes after removal from the toxic atmosphere. In high concentrations, there is increased depth of respiration within a few seconds. This stimulation may be so powerful that casualties cannot voluntarily hold their breath. Violent

convulsions occur after 20 to 30 seconds beginning with cessation of respiration within one minute. Cardiac failure follows within a few minutes. The following are symptoms of moderate and mild exposure:

- (1) Weakness of the legs
- (2) Vertigo
- (3) Nausea
- (4) Headache

b. The following additional symptoms may last for hours or days, depending on the duration of exposure to the agent:

- (1) Convulsions
- (2) Coma

(a) If coma is prolonged, recovery may disclose residual damage to the central nervous system. The central nervous system damage may be manifested by the following:

1. Irrationality
2. Altered reflexes
3. Unsteady gait, which may last for several weeks or longer
4. Temporary or permanent nerve deafness

c. The signs and symptoms of CK are a combination of those produced by AC and a lung irritant. Initially, CK stimulates the respiratory center and then rapidly paralyzes it. In high concentrations, however, its local irritant action may be so great that dyspnea is produced. Exposure is followed by these symptoms:

- (1) Immediate intense irritations of the nose, throat, and eyes, with coughing
- (2) Tightness in the chest
- (3) Lacrimation

(4) Afterwards, the exposed person may become dizzy and increasingly dyspneic. Unconsciousness is followed by failing respiration and death within a few minutes. Convulsions, retching, and involuntary urination and defecation may occur. If these effects are not fatal, the signs and symptoms of pulmonary edema may develop.

d. Prevention. The protective mask with a fresh filter gives protection against field concentrations of blood agent vapor. For protection, MOPP 4 is needed when exposed to or handling liquid AC.

e. Treatment of Blood Agent Casualties. The diagnosis of AC poisoning is suggested by the history, the odor (if detected), the rapid onset of symptoms, and the pink color of the casualties' skin. In casualties exposed

to CK, the diagnosis is suggested by the intense irritation and the rapid onset of symptoms.

(1) Self-Aid

(a) Hydrogen Cyanide. If you get a sudden stimulation of breath or detect an odor like bitter almonds during a chemical attack, put on your mask immediately. Speed is absolutely essential, the effects of this agent are so rapid that within a few seconds you will not be able to put on your mask. Hold your breath until the mask is on, if at all possible. This may be very difficult because of the agent's strong respiratory stimulation.

(b) Cyanogen Chloride. Put on your mask immediately if you experience any irritation of the eyes, nose, or throat.

(2) Buddy Aid. Marines not masked must put on their mask immediately if any vapors of AC or CK are present. Marines who are unable to mask should be masked by the nearest available person (buddy).

(a) Assisted Ventilation. In AC or CK poisoning, if the patient's respiration is feeble or has ceased, immediately administer assisted ventilation. Before the treatment is rendered, remove the patient from the contaminated environment. Continue assisted ventilation until spontaneous breathing returns or until 10 minutes after the last sign of heart, activity has occurred.

(b) Place in Upright Position. The decrease in blood pressure following sodium nitrite injections is negligible unless the patient is allowed to get into an upright position.

5. BLISTER AGENTS. Blister agents (vesicants) are likely to be used to produce casualties and to force opposing troops to wear full protective equipment. Blister agents are used to degrade fighting efficiency rather than to kill, although exposure to such agents can be fatal. Thickened blister agents will contaminate terrain, ships, aircraft, vehicles, or equipment and present a persistent hazard. Vesicants include sulphur mustard (H and HD), nitrogen mustards (HN), lewisite (L) (this may be used in mixture with HD), and halogenated oximes (example, phosgene oxime (CX)). Halogenated oximes properties and effects are very different from those of the other vesicants.

a. Symptoms of Blister Agents. The following are the general symptoms for blister agents:

(1) Burns or blister the skin or any other part of the body they contact (eyes, mucous membranes, lungs, and skin; mustards may act on blood-forming organs).

(2) They damage the respiratory tract when inhaled and cause vomiting and diarrhea when ingested.

(3) Both L and CX cause immediate pain on contact.

(4) Mustards cause little or no pain at the time of exposure.

b. Prevention. Vesicants poison food and water and make other supplies dangerous to handle. Vesicants can be disseminated by artillery shell, mortar shell, rocket, aircraft spray, and bomb. The severity of a blister agent burn

is directly related to the concentration of the agent and the duration of contact with the skin. The M-40 protective mask and protective garments can provide protection against these agents.

c. Treatment of Blister Agent Casualties. The following are explanations of how to treat and decontaminate a blister agent casualty.

(1) Self Aid

(a) Move from the area of contamination.

(b) Wash out eyes with water, tipping the head and allowing the water to run off the bottom eye to the ground. Switch.

(c) Use the M291 Decon kit to blot agent from the skin, ensuring that you stay clear of mucous membranes.

(d) Use the M291 kit to decontaminate other equipment that may have been exposed or contaminated.

(e) Put on NBC protective equipment to prevent further exposure and seek treatment from medical personnel.

(2) Buddy Aid

(a) Ensure that you are in MOPP level 4.

(b) Move the Marine to an area free from contamination.

(c) Tip the head and wash out the bottom eye with water and switch the position of the head for the other eye.

(d) Use the M291 kit to blot the face around the eyes and decontaminate the skin that has been exposed or contaminated.

(e) Put on NBC protective equipment on the Marine to prevent further exposure and seek medical treatment for the Marine.

6. CHOKING AGENTS. Chemical agents that attack lung tissue, primarily causing pulmonary edema, are classified as lung damaging agents (choking agents). They include phosgene (CG), diphosgene (DP), chlorine, and chloropicrin (PS). Best known of these agents is CG. Agents in this class are called lung-damaging agents because irritation of the bronchi, trachea, larynx, pharynx, and nose may occur and, with pulmonary edema, contribute to the sensation of choking. Blister agents and certain systemic agents may injure the respiratory tract. Persons exposed to CG need not be withdrawn during combat, unless signs of pulmonary distress appear.

a. Symptoms. During and immediately after exposure, the following symptoms are likely occur:

(1) Coughing

(2) Choking

(3) Tightness in the chest

- (4) Nausea
- (5) Vomiting
- (6) Headache
- (7) Lacrimation

b. The presence or absence of these symptoms is of little value in immediate prognosis. Some patients with severe coughs fail to develop serious lung injury, while others with little sign of early respiratory tract irritation develop fatal pulmonary edema. There may be an initial slowing of the pulse, followed by an increase in rate. A period follows during which abnormal chest signs are absent and the patient may be symptom-free. This interval commonly lasts 2 to 24 hours but may be shorter. It is terminated by the following signs and symptoms of pulmonary edema:

- (1) Cough (occasional substantially painful).
- (2) Dyspnea
- (3) Rapid shallow breathing
- (4) Cyanosis (bluing of the skin)
- (5) Nausea
- (6) Vomiting
- (7) Frothy sputum
- (8) Rales and rhonchi are audible over the chest (lungs filling with liquid)
- (9) Breath sounds are diminished
- (10) Pale, clammy skin
- (11) Low blood pressure
- (12) Feeble, rapid heartbeat

c. Prevention. The protective mask or a gas-particulate filter unit (collective protector) gives protection against lung damaging agents.

d. Treatment. The treatments for this agent is the same for self and buddy aid. The protective mask should be put on immediately when any of the conditions previously described exist.

- (1) Place mask on immediately.
- (2) Remain in a position of rest until medical treatment is available.

**REFERENCES:**

MCWP 3-37.3 NBC Decontamination, pages 2-1, 2-2, 9-1, and 10-6.

MCRP 4-11.1A Treatment of Chemical Agent Casualties and Conventional Military Agents, pages 2-1 through 2-13 and D-1 through E-5.

MCWP 3-37.2 NBC Protection, pages 1-9 through 1-13.