TM 10-277

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

PROTECTIVE CLOTHING CHEMICAL OPERATION

HEADQUARTERS, DEPARTMENT OF THE ARMY
JULY 1967

TAGO 5683A

SAFETY PRECAUTIONS
WHEN WEARING PROTECTIVE CLOTHING

Read and comply fully with instructions permanently attached to coveralls, hoods, aprons, gloves, and covers, before donning the clothing. Pay particular attention to special closure and adjustment features.

Under conditions of high humidity and temperature, adequate drinking water and salt tablets must be available and rest periods more frequent when wearing protective clothing.

Inspect each item before putting it on. Defective protective clothing will not be used.

Never wear rubberized protective clothing for firefighting.

Wear protective clothing only for time needed to complete operation.

Wear prescribed breathing apparatus when working in areas where hazardous fumes, gases, or liquids are present.

First aid and personal decontamination will be performed immediately as described in TM's 3–220, 8–285 and FM's 21–11, 21–40 and 21–41 if chemical agents came into contact with the skin or eyes or is inhaled through faulty breathing apparatus.

TECHNICAL MANUAL
No. 10–277

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *17 July 1967*

PROTECTIVE CLOTHING
CHEMICAL OPERATIONS

CHAPTER 1

INTRODUCTION

1. Scope

a. This manual describes the various items of permeable and impermeable protective clothing and accessories and provides instructions for their use, fitting, wear, and decontamination in chemical operations and certain biological and radiological operations.

b. Because of the time element involved in the process of phasing one system into the Army supply system and phasing another out, both the current Standard A chemical protective clothing outfit (permeable) and the Standard B vesicant agent protective ensemble (permeable) are covered in this manual.

2. Record and Report Forms

a. DA Form 2407 (Maintenance Request). DA Form 2407 is designed to provide maintenance information. At the organizational level, it is used for requesting repairs and maintenance services, reporting accomplishment of all modification work orders (MWO's), and submitting equipment improvement recommendations (EIR's). The form is also used for reporting receipt of defective material, except items damaged in shipment.

b. Standard Form 361 (Discrepancy in Shipment Report (DISREP)). SF 361 is used for reporting discrepancies in shipment.

c. DD Form 6 (Report of Packaging and Handling Deficiencies). DD Form 6 is used for reporting deficiencies resulting from improper preservation, packaging, packing, handling, and marking.

3. Basis for Issue

The basis for issue of current CB protective clothing is contained in TA's 50–901 (Peace), 50–902 (Mob), and 50–914.

4. Modification

The information contained in and the protective clothing described in this manual are current at the time of preparation. Changes in protective clothing concepts and systems may require changes or revisions of the material presented. Field experience also may suggest modification. Users of this manual are encouraged, therefore, to submit recommended changes or comments for improvement. Comments should be keyed to the specific page, paragraph, and line of the manual in which the change is recommended. Reasons should be provided for each comment to insure complete understanding and evaluation. Comments should be forwarded direct to the Commandant, U.S. Army Quartermaster School, Fort Lee, Va. 23801.

CHAPTER 2

PERMEABLE PROTECTIVE CLOTHING

Section I. INTRODUCTION

5. Description

a. General. Permeable protective clothing allows the passage of air and moisture through its fabric. It is clothing which has been impregnated with chemicals that absorb or neutralize vapors, aerosols, and small liquid droplets of chemical agents. The clothing does not protect against large drops or splashes of these agents. Small droplets will penetrate impregnated clothing after about 6 hours. When clothing is grossly contaminated, the wearer must immediately take off the garment or cut off the portion that has been wetted to prevent continued contact of liquid chemical agent with his skin. Permeable protective clothing does not destroy G agents. However, like any other item of clothing and head covering, permeable protective clothing will serve to keep radiological contamination from coming into actual contact with the skin. The protective clothing and equipment used for CBR protection should be compatible with the job to be done and the hazards encountered (FM 21–40 and TM 3–220).

b. Wearability. The wearing quality of protective clothing is not affected by impregnation. The increase in garment weight and the odor of the impregnite may cause slight discomfort to the wearer, but these factors will not materially lessen his efficiency. Impregnated clothing should not be worn longer than necessary, especially in warm weather. It is less comfortable than unimpregnated clothing, and prolonged wearing may cause a slight rash where the skin is in direct contact with the impregnate. Skin rash can be reduced, and in many cases, eliminated, by wearing unimpregnated shorts and undershirts as needed. See note, paragraph 16. Troops must be given practice in wearing permeable protective clothing, especially in warm climates. See paragraphs 12 and 20.

6. Use

Permeable protective clothing is intended primarily for protection of personnel exposed to vapors, aerosols, and small liquid droplets of blister agents and V-agents in the field. It is issued to troops upon the decision of the theater commander and as outlined in TA 50–902 (Mob) and AR 700–62.

7. Fitting of Protective Clothing

To be effective, protective clothing must fit the wearer comfortably and cover him completely. To insure complete protection, all garment openings must be closed securely. In addition to the directions on the instruction labels, special attention must be paid to—

a. Closures. If a garment fits poorly due to faulty closures, the garment should be exchanged for clothing with satisfactory closures.

b. Shrinkage. Impregnation, decontamination, and laundering cause clothing to shrink. Clothing which has been reimpregnated must be resized upon return to proper channels for storage and issue.

c. Socks. Impregnated socks are issued in the size normally worn.

d. Gloves. Impregnated cotton gloves should overlap sleeves about 5 inches.

8. Protective Systems

At present there are two types of permeable protective clothing in the supply system. The standard A system (the chemical protective

clothing outfit) is based on a protective liner concept. The standard B system (the vesicant agent protective ensemble) is comprised of a two-layer system of certain impregnated items of general and special issue clothing. The protective mask, protective mask hood, protective gloves, protective socks, and leather combat boots treated with vesicant gas resistant leather dressing dubbing, are used with both systems of protective clothing.

Section II. CHEMICAL PROTECTIVE CLOTHING OUTFIT (STANDARD A)

9. Issue

The chemical protective clothing outfit is issued as an assembly: clothing outfit, chemical protective (FSN 8415–782–3240/3244).

10. Components

All components of the chemical protective clothing outfit, except the clothing bag, are impregnated with a modification of the Standard XXCC3 impregnite emulsion by the manufacturer. The liners are worn underneath the appropriate clothing for tropical, temperate, and cold-wet conditions. The chemical protective clothing outfit is *not* intended for use in cold-dry conditions; arctic clothing normally has sufficient bulk for physical protection.

a. Chemical Protective Clothing Bag (fig. 1).

(1) *Description.* The olive drab polyethylene chemical protective clothing bag (FSN 8465–782–3238) is 21 inches long and 14¾ inches wide. One end of the bag is fitted with an interlocking reclosable opening for limited reuse of the bag. An instruction label is positioned at the center of the bag.

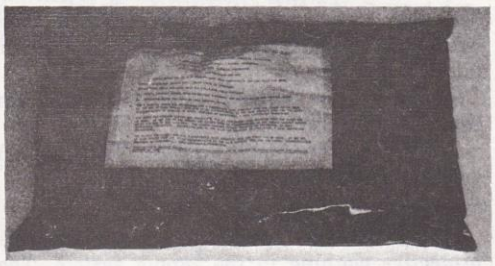


Figure 1. Chemical protective clothing bag.

(2) *Use.* The bag is used to provide protection for chemical protective clothing against rain, moisture, and sunlight. The bag contains the items shown in figure 2. These items are as follows:

(*a*) One chemical protective shirt liner.
(*b*) One chemical protective trouser liner.
(*c*) Three pairs of chemical protective cushion sole socks.
(*d*) One pair chemical protective cotton gloves.

b. Chemical Protective Shirt Liner. (A, fig. 3).

(1) *Description.* The olive green chemical protective shirt liner (FSN 8415–900–8241/8245) is made of cotton sateen. It is single breasted and has set-in sleeves, a standup collar, and ribbed cuffs. A protective double flap is provided with four buttons to secure both front edges of the liner. An instruction label is attached to the garment.

(2) *Use.* The shirt liner is used for protection against small liquid droplets and vapors of blister agents and V-agents. It is designed to be worn over the T-shirt. The shirt liner, along with the trouser liner (below) may replace the long underwear in the cold-wet uniform (TM 10–275), when used in conjunction with the T-shirt and shorts.

(3) *Sizes available.* The chemical protective shirt liner is available in the following sizes: extra small, small, medium, large, and extra large.

c. Chemical Protective Trouser Liner (B, fig. 3).

(1) *Description.* The olive green chemical protective trouser liner (FSN 8415–900–8283/8287) is made of cotton sateen. It has four waistband tie tapes, a double closure fly front with two buttons, and ribbed cuffs. An instruction label is attached to the garment.

(2) *Use.* The trouser liner is used for protection against small liquid droplets and vapors of blister agents and V-agents and is designed to be worn over the underwear. The trouser liner, along with the shirt liner (above) may replace the long underwear in the cold-wet uniform (TM 10–275).

(3) *Sizes available.* The chemical protective trouser liner is available in the

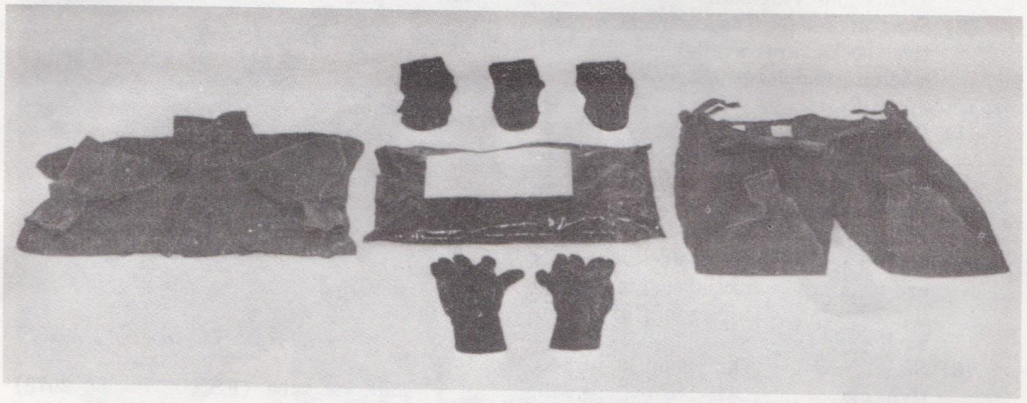
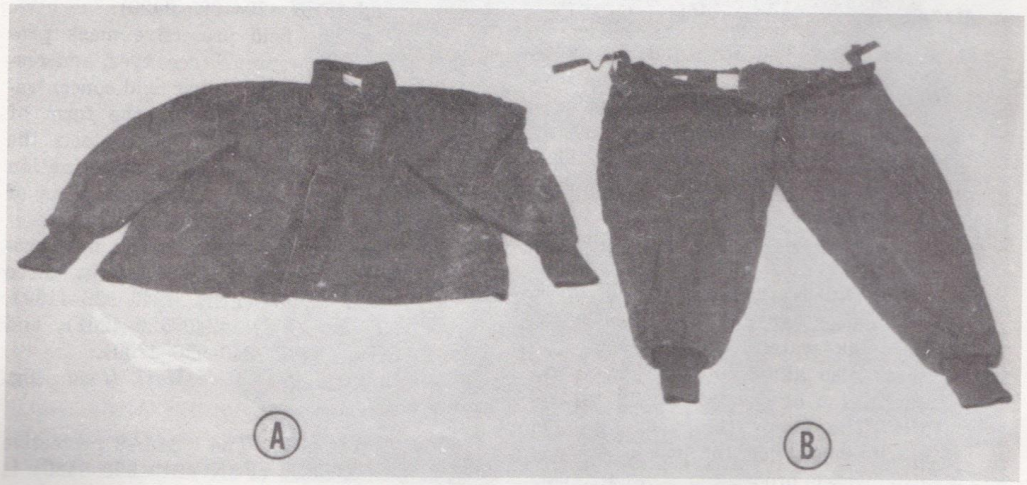


Figure 2 Chemical protective clothing bag with components.



A—Shirt liner
B—Trouser liner

Figure 3. Chemical protective shirt and trouser liner.

following sizes: extra small, small, medium, large, and extra large.

d. Chemical Protective Socks (A, fig. 4).

(1) Description. The olive green cushion sole stretch type protective socks (FSN 8415–782–3221/3223) are 50 percent wool, 30 percent nylon, and 20 percent cotton. The socks have a 15-inch leg length.

(2) *Use.* The chemical protective socks are used for protection against small liquid droplets and vapors of blister agents and V-agents.

(3) *Sizes available.* The chemical protective socks are available in small, medium, and large sizes.

e. Chemical Protective Gloves (B, fig. 4).

(1) *Description.* The olive green chemical protective gloves (FSN 8415–782–3239/3246) are cotton knit, slip-on, seamless palm, work type with a knitted cuff.

(2) *Use.* The chemical protective gloves are used for protection against small liquid droplets and vapors of blister agents and V-agents.

(3) *Sizes available.* The chemical protective gloves are available in small, medium, and large sizes.

Figure 4. Chemical protective socks and gloves.

11. Complementary Protective Equipment

a. M17A1 Field Protective Mask (fig. 5).

(1) *Description.* The M17A1 field protective mask assembly includes the mask, carrier, two lens outserts, M1 resuscitation tube, and M1 water canteen cap. The facepiece is made of molded rubber with filter elements in each cheek, plastic lenses in each eye opening, and voicemitter-outlet valve in front. The mask maintains the essential design features of the M17 mask but adds a capability for the wearer to drink water while masked. The mask also allows mask-to-mouth resuscitation of chemical agent casualties. The major components of the mask consist of the mask, canteen cap, water proofing bag, and a carrier. Accessories for the M17A1 mask include the M1 protective mask resuscitation tube (FSN 4240–930–2078) the M4 field protective mask winterization kit (FSN 4240–065–0319), and the M6A2 field protective mask hood (FSN 4204–999–0420).

(2) *Use.* The field protective mask protects the wearer's face, eyes, and respiratory tract against field concentrations of CB agents in the form of vapors or aerosols, and protects the face and eyes against contamination from splashes and liquid droplets of the agents.

(3) *Sizes available.* The M17A1 field protective mask is available in three sizes: small (FSN 4240–926–4199), medium (FSN 4240–926–4201), and large (FSN 4240–926–4200).

b. M6A2 Field Protective Mask Hood. (fig. 6).

(1) *Description.* The M6A2 protective mask hood (FSN 4240–990–0420) is made of butyl-rubber-coated nylon cloth and has five openings in the

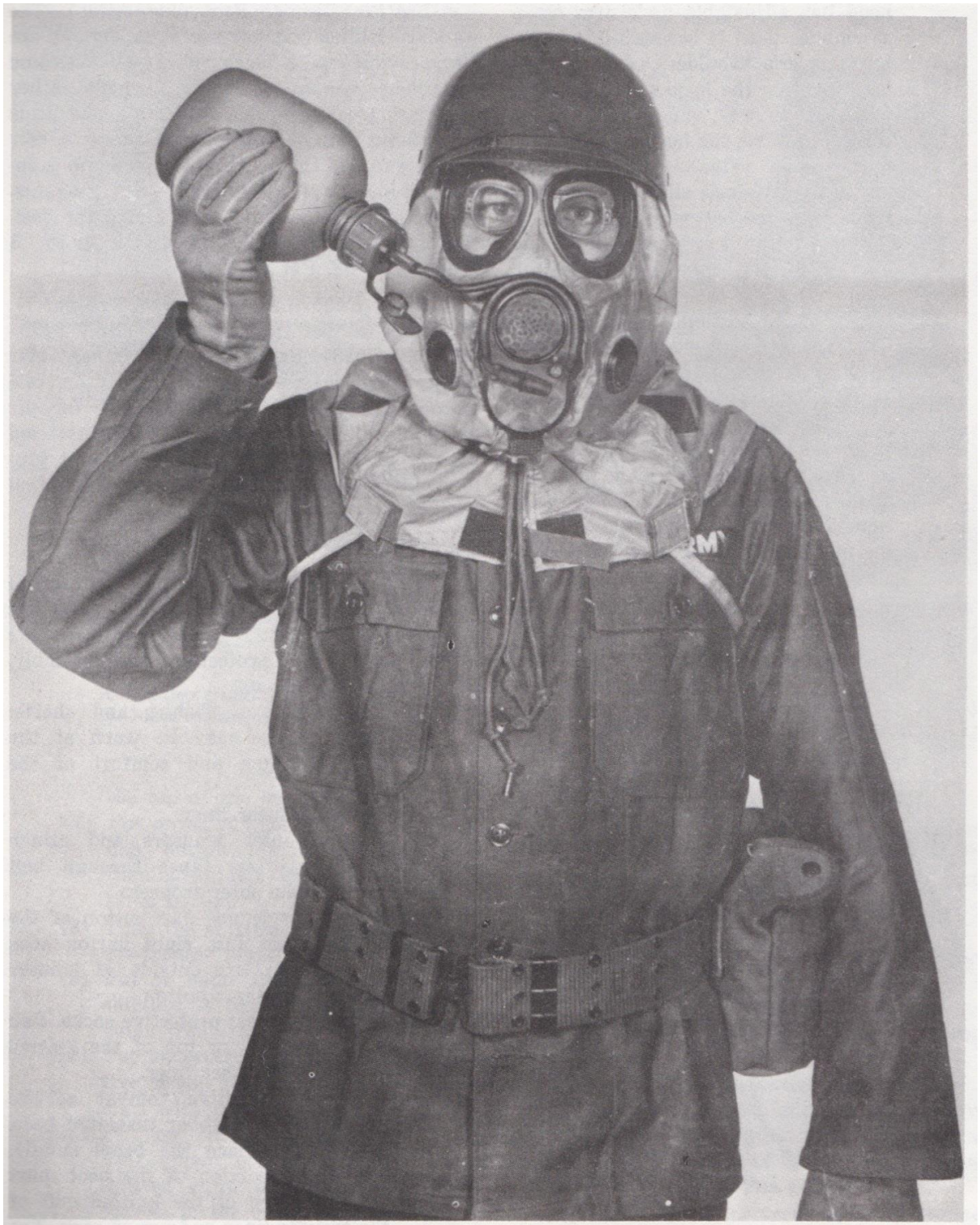


Figure 5. M71A1 field protective mask with M6A2 hood.

front to accommodate appropriate parts of the M17 series mask. The hood has adjustable underarm strap assemblies used to secure the cape to the wearer's shoulders, a neck cord used to draw the hood snugly around the wearer's neck, and an outlet valve cord used to tie the hood to the voicemitter-outlet valve assembly of the mask. A 10½-inch slide fastener extends from the bottom of the opening for the voicemitter assembly to the bottom of the cape to enable the wearer to open the cape for ventilation when protection is not required.

(2) *Use.* The M7A2 hood is designed to be worn with the M17A1 (*a* above), or M17 field protective mask. It protects the wearer's head, neck and shoulders against vapors, aerosols, and droplets of chemical agents and against biological agent contamination. The hood must be attached to the mask and the combination stored in the mask carrier ready for instant use.

Figure 6. M6A2 field protective mask hood.

c. Leather Combat Boot (Protective). The standard leather combat boots (A, fig. 7) are black cowhide with black rubber outsoles and heels. They are smooth finish, and all leather parts are treated with a fungicide. The boots are treated with vesicant gas resistant leather dressing to seal them against small liquid droplets and vapors of blister agents and V-agents. For detailed instructions on applying the vesicant gas resistant leather dressing, refer to TB 3–8030–200–12, FM 21–40, and FM 21–41.

d. Black Rubber Insulated Boot (B, fig. 7). The black rubber insulated boot (FSN 8430–823–7024/7083) has a seamless inner/outer carcass, and outer-sole, sealed insulation, and an outside air valve to compensate for air pressure differentials. The rubber insulated boot, worn in cold weather, has inherent protective characteristics and needs no additional treatment for protective purposes.

12. Wear

a. Donning. Before putting on the chemical protective clothing outfit (fig. 8), attach the M6A2 or M6 protective mask hood to the M17A1 or M17 field protective mask assembly, then proceed as follows:

(1) Put on cotton T-shirt and shorts. (These items may be worn at the discretion and comfort of the wearer.)

(2) Put on trouser liner.

(3) Put on outer trousers and attach liner waist tie tapes through belt loops of the outer trousers.

(4) Button inside gas flap button of the trouser liner into right button hole, then button left outside of trouser liner to the same button.

(5) Put on chemical protective socks. Pull top of socks over top of the knitted cuff of the trouser liner.

(6) Put on protective combat service boots or black rubber insulated boot, as required; lace the boots snugly. The upper portion of the boot must cover the top of the knitted cuff of the trouser liner and top of sock. The cuff of outer trousers is bloused over

A—Leather combat boot
B—Black rubber insulated boot

Figure 7. Boots.

the top of the boot.

(7) Put on shirt liner. Button inside gas flap button into right buttonhole, then button left outside of liner to the same button.

(8) Tuck the shirttail of the liner inside the trouser liner.

(9) Put on outer shirt. Do *not* tuck the shirttail of the outer shirt into the outer trousers.

(10) Put on protective mask, with protective mask hood attached, in accordance with instructions in FM 21–41.

(11) Put on chemical protective gloves. Pull upper portion of gloves over knitted cuffs of the shirt liner. Sleeves of the outer shirt fit over the upper portion of the protective gloves.

b. Removing.

(1) *No contamination.* When no contamination is involved, removal of the chemical protective clothing outfit generally is the same as removal of any other clothing.

(2) *Slight contamination.* When the clothing is contaminated with small droplets of spray or aerosol, use the M13 Decontaminating and Reimpregnating Kit (par. 13).

(3) *Gross contamination.* When clothing is grossly contaminated, the wearer must immediately take off the garment or cut out the portion that has been wetted. See paragraph 5*a*.

(4) *Undressing procedure at personnel decontamination station.* Although

A—Wearing liners, gloves, and socks
B—Wearing liners, tropical uniform, field protective mask and hood, and boots

Figure 8. Chemical protective clothing outfit.

the procedures below are for use at a personnel decontamination station, they should be followed as nearly as possible whenever removing the contaminated chemical protective clothing outfit.

(*a*) Drop individual equipment in designated areas prior to entering personnel decontamination station.

(*b*) At entrance to station, remove contamination from boots by scrubbing twice with hot, soapy water and by rinsing with clear water.

(*c*) Decontamination station personnel wipe outside of hood, including the tabs and exposed portions of the mask, with hot, soapy water and rinse with clear water, taking care not to permit water to enter the filter elements. With the aid of the decontamination station personnel, loosen the neck-cord drawstring; unzip neck cape; detach tabs on front of the cape and fold cape back to open position.

(*d*) Remove outer clothing (except, trousers) and remove boots.

(*e*) Peel down and remove outer trousers, trouser liner, and socks, folding inside out. Unbutton shirt liner. Peel shirt liner and gloves off, pulling the sleeves and gloves inside out.

(*f*) Move to the shower area. Slide the hands under the hood on both sides of the head and lift the hood over the front of the mask. Holding breath, remove mask with hood and remove undershirt. Take shower flushing upper portion of body thoroughly and then resume normal breathing. Proceed with shower, using hot, soapy water and paying attention to hairy portions of the body, hands (including under the fingernails), face, and neck area. Dry body.

(*g*) Be monitored for radioactivity, and examined for other types of contamination. Receive proper treatment or first aid as needed.

(*h*) Move to clothing reissue area and put on clean clothing.

(5) *Comfort.* When temperature conditions in a nontoxic area become too warm for the wear of both the liners and the outer clothing, remove the outer layer. In hot weather, when the field protective mask and hood are worn and the work rate is high, the outer clothing may be removed. Although some reduction in protection will result, removing the outer clothing will reduce the probability of heat stroke.

13. Decontaminating and Reimpregnating Kit
(fig. 9)

The M13 decontaminating and reimpregnating kit (FSN 4230–907–4828) is provided as an emergency means for decontaminating the individual's skin, outer clothing, and equipment when subjected to contamination by chemical agent and as a means of reimpregnating the chemical protective clothing outfit (shirt liner, trouser liner, protective gloves, and protective socks). For detailed instructions on the use of the kit, refer to TB 3–4230–207–10.

Section III. VESICANT AGENT PROTECTIVE ENSEMBLE (STANDARD B)

14. General

The vesicant agent protective ensemble is available in two types: one for wear under temperate weather conditions and one for wear under cold-wet weather conditions. For details concerning impregnation and reimpregnation of the vesicant agent protective ensemble, refer to TB 3–4230–207–10, TM 3–303, and TM 10–280.

15. Issue

Vesicant agent protective ensembles are not

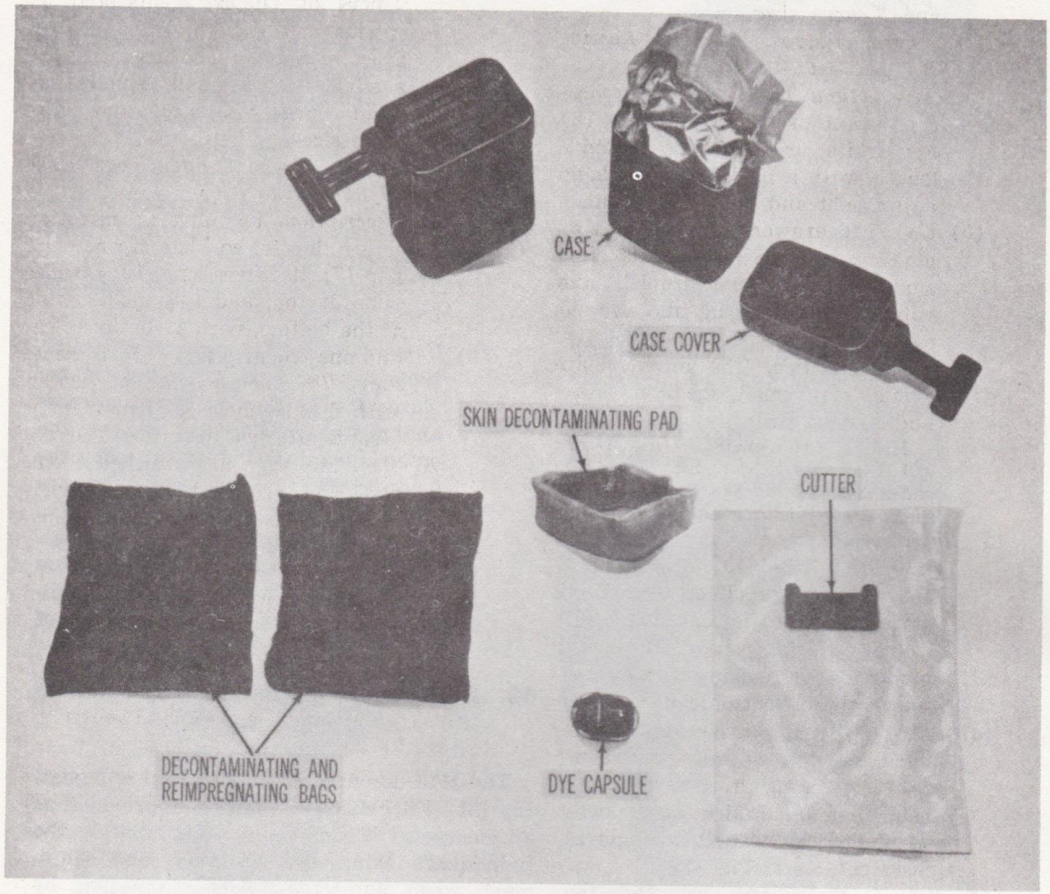


Figure 9. M13 decontaminating and reimpregnating kit.

issued as assemblies. All components must be requisitioned separately. For a more efficient state of readiness, components may be requisitioned according to climatic conditions and according to sizes, and may be packaged for instant issue to troops when required. SB 10–523 contains information on size tariffs per 1,000 individuals.

16. Components

When practicable, all Federal stock numbers listed are for medium size.

a. Temperate Weather Ensemble (fig. 10).

(1) *Undershirt, vesicant agent protective (FSN 8415–262–5218-series).*

(*a*) *Description.* The cotton knit vesicant agent protective undershirt (1) is a white or olive green pullover-style shirt with full length sleeves.

(*b*) *Use.* The undershirt is worn as an undergarment for protection against small liquid droplets and vapors of blister agents and V-agents.

(*c*) *Sizes available.* The undershirt is available in small, medium, large,

and X-large sizes.

(2) *Drawers, vesicant agent protective (FSN 8415–264–0561-series).*

(*a*) *Description.* The cotton knit vesicant agent protective drawers (2) are white or olive green, ankle length, with a back lace waistband adjustment and button fly front.

(*b*) *Use.* The drawers are worn as an undergarment for protection against small liquid droplets and vapors of blister agents and V-agents.

(*c*) *Sizes available.* The drawers are available in small, medium, large, and X-large sizes.

Note. Unimpregnated cotton T-shirt and shorts may be worn next to the skin under the vesicant agent underwear at the discretion and comfort of the wearer.

(3) *Shirt, vesicant agent protective (FSN 8415–753–6445).*

(*a*) *Description.* The olive green cotton sateen shirt (6) is coat styled with a convertible collar, full-length sleeves, and two breast pockets with flap and button closure.

(*b*) *Use.* The shirt is worn as an outer garment over the undershirt (par. 18*b*(1)) for protection against small liquid droplets and vapors of blister agents and V-agents.

(*c*) *Sizes available.* The shirt is available in X-small, small, medium, large, and X-large sizes.

(4) *Trousers, vesicant agent protective (FSN 8415–753–6440).*

(*a*) *Description.* The olive green cotton sateen vesicant agent protective trousers (8) have two patch pockets without flaps located on the left and right front trousers legs and two patch pockets with flaps located on the left and right hips. The trousers have a buttoned fly-front closure with inside buttons for attachment of the protective fly.

(*b*) *Use.* The trousers are worn as an outer garment over the drawers (par. 18*b*(2)) for protection against small liquid droplets and vapors of blister agents and V-agents.

(*c*) *Sizes available.* The trousers are available in X-small, small, medium, large, X-large, and XX-large sizes.

(5) *Flap set, vesicant agent protective (FSN 8415–823–7680).*

(*a*) *Description.* The olive green cotton sateen flap set consists of one shirt flap (7) 29 inches long, 10¼ inches wide at top, and 5½ inches wide at the bottom, with 21 buttonholes; and one trousers flap (9) 15 inches long, 7¾ inches wide at center, with 8 buttonholes. An instruction label is attached to each garment.

(*b*) *Use.* The flaps are attached to the shirt and trousers to form an overlapping closure to prevent vapor leakage through these openings.

(*c*) *Size available.* The shirt flap and trousers flap are available in one size only.

(6) *Socks, vesicant agent protective (FSN 8415–899–0642).*

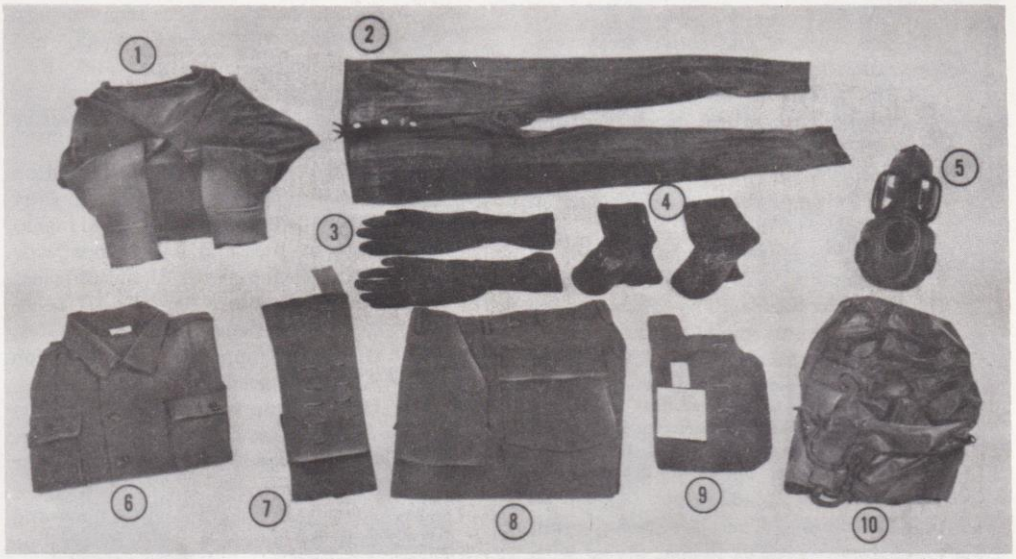
(*a*) *Description and use.* The olive green or black vesicant agent protective socks (4) are 50 percent wool, 30 percent nylon, and 20 percent cotton and have a wool-reinforced heel. The socks have a 15-inch leg length and are worn for protection against small liquid droplets and vapors of blister agents and V-agents.

(*b*) *Sizes available.* The socks are available in small, medium, and large sizes.

(7) *Gloves, cloth, cotton knit, vesicant agent protective, (FSN 8415–889–3690).*

(*a*) *Description and use.* The natural color cotton knit vesicant agent protective gloves (3) are slip-on style with long knitted wristlets. The gloves are worn to protect the hands and wrists from small liquid droplets and vapors of blister agents and V-agents.

(*b*) *Sizes available.* The gloves are



1 Undershirt
2 Drawers
3 Gloves
4 Socks
5 M17 field protective mask
6 Shirt
7 Shirt flap
8 Trousers
9 Trousers flap
10 M6 field protective mask hood

Figure 10. Vesicant agent protective ensemble, temperate weather.

available in small, medium, and large sizes.

(8) *Combat service boots.* See paragraph 11*c*.

b. Cold Weather Ensemble (fig. 11). The same underwear (1 and 2), socks (5), and gloves (3) worn in the temperate weather ensemble (*a* above) are worn in the cold weather ensemble. The cold weather ensemble also includes the following:

(1) *Coat, vesicant agent protective (FSN 8415–753–6280).*

(*a*) *Description.* The olive green cotton sheeting vesicant agent protective coat (6) is single breasted with a band collar, drawcord adjustments at waist and bottom, and elastic wrist closure. An instruction label is attached to the garment.

(*b*) *Use.* The coat is worn as an overgarment to protect environmental (cold weather) clothing from exposure to small liquid droplets and vapors of blister agents and V-agents.

(*c*) *Sizes available.* The coat is available in small, medium, and large sizes.

(2) *Trousers, vesicant agent protective (FSN 8415–753–6288).*

(*a*) *Description.* The olive green cotton sheeting vesicant agent protective trousers (7) are devoid of fly and pockets, and have drawcord adjustments at the waist and leg bottoms.

(*b*) *Use.* The trousers are worn as an overgarment to protect environmental clothing from exposure to liquid droplets and vapor agents.

(*c*) *Sizes available.* The trousers are available in small, medium, and large sizes.

(3) *Glove shells (FSN 8415–269–5700).*

(*a*) *Description and use.* The black

1 Undershirt
2 Drawers
3 Cotton knit gloves
4 Glove shells
5 Socks
6 Coat
7 Trousers
8 M17 field protective mask
9 M6 field protective mask hood

Figure 11. Vesicant agent protective ensemble, cold weather.

leather glove shells (4) are worn over the cotton knit vesicant agent protective gloves (3).

(*b*) *Sizes available.* The glove shells are available in sizes 1 through 5.

(4) *Black rubber insulated boot.* See paragraph 11*d*.

17. Complementary Protective Equipment

a. M17A1 or M17 Field Protective Mask Assembly. See paragraph 11*a*.

b. M6A2 Field Protective Mask Hood. See paragraph 11*b*.

18. Donning and Removing

a. General. Items of clothing for both the temperate weather ensemble and the cold weather ensemble usually are put on in the order in which they are listed below. To insure adequate protection with the protective clothing, individuals should assist each other in putting on and taking off the clothing.

b. Donning Temperate Weather Ensemble (fig. 12).

(1) Put on undershirt; the sleeves should extend beyond the wrists. (The unimpregnated T-shirt, if worn, should be tucked well down inside the drawers worn next to the skin.)

(2) Put on drawers (over short drawers, if worn) and button the fly completely. Tuck shirttail of protective undershirt into the protective

drawers. The legs of the drawers should extend below the ankles.

(3) Put on the socks, and pull the tops up tightly over the bottoms of the legs of the drawers.

(4) Put on shirt and trousers; do not button.

(5) Attach flap set to shirt and trousers. To do this—

(*a*) Detach the trousers flap from the shirt flap by breaking the stitch tack.

(*b*) Place the right front of the shirt into the fold of the shirt flap and button the flap to the right front of the shirt.*

(*c*) Button the shirt in usual manner.

(*d*) Fold the shirt flap over the edge of the left shirt front and button it in place, using the remaining row of buttonholes.

(*e*) Fold the necktab over the shirt neck opening and button it to the top shirt button.

(*f*) Button the trousers flap to the right fly, with the extension side of the flap toward the inside of the trousers. For smaller-sized trousers, fold the bottom of the flap.

(*g*) Break or remove stitch tacks in left fly of trousers.

(*h*) Fold the outside portion of the flap, insert into left fly, and button to corresponding buttons.

(*i*) Fold the inside portion of the flap. Fold the extension over the waistband and button it to the waistband button.

(6) Tuck the shirttail inside the trousers and tighten the waistband of the trousers.

(7) Pull the tops of the socks over the bottoms of the trousers legs.

(8) Put on the vesicant agent-treated leather combat service boots. Lace the boots snugly and secure the tops around the trousers bottoms.

(9) Put on the protective mask assembly, with protective mask hood attached, in accordance with instructions in FM 21–41.

(10) Put on the gloves. Pull the gauntlets of the gloves up over the sleeves of the shirt to form a tight seal.

c. Removing Temperate Weather Ensemble. Extreme care must be exercised in removing and handling contaminated clothing and individual equipment. When removing and handling such items at a decontamination station, individuals should follow the procedure outlined below, assisting one another to the extent practicable.

(1) Drop individual equipment in designated area prior to entering personnel decontamination station.

(2) At entrance to station remove contamination from boots by scrubbing twice with hot, soapy water and by rinsing with clear water.

(3) Decontamination station personnel wipe outside of hood, including tabs and exposed portions of the mask, with hot, soapy water and rinse with clear water, taking care not to permit water to enter the filter elements. With the aid of decontamination station personnel, loosen the neckcord drawstring; unzip neck cape; detach tabs on front of the cape and fold cape back to open position.

(4) Remove boots; unbutton and loosen outer clothing, and remove, taking care not to come in contact with contamination.

(5) Remove socks, drawers and gloves in that order.

(6) Move to the shower area. Slide the hands under the hood on both sides of the head, and lift the hood over the front of the mask. H o l d i n g breath, remove mask with hood and remove undershirt. Take s h o w e r, flushing upper portion of body thoroughly, and then resume n o r m a l breathing. Proceed with shower, using hot, soapy water and paying attention to hairy portions of the body, hands (including underside of fingernails), face, and neck area. Dry body.

*Right and left refer to the wearer's right and left when wearing the clothing.

A—Wearing underwear, gloves, and socks
B—Wearing outer clothing, with flap set, and field protective mask and hood, and boots

Figure 12. Vesicant agent protective ensemble, temperate weather.

A—Wearing underwear, gloves, socks, and usual cold weather clothing
B—Wearing coat, trousers, rubber insulated boots, leather glove shells, and field protective mask and hood

Figure 13. Vesicant agent protective ensemble, cold weather.

(7) Be monitored for radioactivity and receive first aid if needed.
(8) Move to clothing reissue area and put on clean clothing.

d. Handling Contaminated Items. Decontamination station personnel handling contaminated articles must wear complete ensembles of protective clothing plus impermeable gloves and impermeable aprons. Contaminated permeable protective clothing, except clothing obviously contaminated with splashes of liquid chemical agent, must be enclosed in tightly closed impermeable containers prior to being returned to a mobile field laundry for decontamination. Clothing contaminated with splashes of liquid chemical agent must be destroyed by burning or burying.

Note. Consideration must be given to the downwind vapor hazard produced when burning contaminated items.

e. Donning Cold Weather Ensemble (fig. 3).

(1) Put on underwear and socks as described in *b* above.
(2) Put on usual environmental cold weather clothing.
(3) Put on vesicant agent protective coat and trousers; do not tighten drawcords.
(4) Put on rubber insulated boots. Lace the boots snugly and secure the tops around the cold weather trousers.
(5) Tighten all drawcords.
(6) Put on the protective mask assembly, with protective mask hood attached, in accordance with instructions in FM 21–41.
(7) Put on the gloves. Pull the gauntlets of the gloves up over the sleeves of the protective coat to form a tight seal.

f. Removing Cold Weather Ensemble. Refer to subparagraph *c* above.

Section IV. WEARING PERMEABLE PROTECTIVE CLOTHING

19. General

During CB operations the wearing of CB protective clothing is necessary in order to provide the required body protection. Since each situation will dictate what is essential, the directions given below are but a guide. Good common sense rules in regard to wearing protective clothing will insure maximum combat effectiveness and comfort of personnel and, at the same time, provide the required protection.

20. Wearing

Maximum protection against CB agents requires that protective clothing be worn at the "ready" or "buttoned up" position. Body ventilation under these conditions will be at a minimum and may result in discomfort and heat injury, particularly during prolonged periods of wear in hot weather. These effects can be minimized by wearing the protective clothing during training activities and taking the following precautions during training exercises and during CB operations:

a. Protective clothing should be worn as loose-fitting as practical and need not be worn buttoned up at all times. During normal activities the coat and shirt collar, sleeves, and hood may be worn open, but should be closed immediately when liquid or vapors of agents are encountered or when an attack is imminent.

b. When the clothing is worn open, the poncho should be readily available to provide emergency protection in case of enemy surprise attack with CB agents.

c. Personnel required to wear protective clothing for extended periods of time should follow the instructions contained in DA Circular 40–33 and especially increase water and salt consumption.

d. In toxic atmospheres, CBR personnel should test for liquids and vapors of agents frequently in order to insure that the mask, hood, and protective clothing are worn, buttoned up only when necessary. For detailed unmasking procedures, refer to FM 21–40 or

FM 21–41.

e. When the situation requires personnel to wear the mask during sleeping hours, protective clothing should be worn buttoned up. In addition, the poncho should be immediately available.

f. Personnel wearing protective clothing should, if practicable, approach a contaminated area from the up-wind direction. Clothing must be buttoned up and the mask and hood donned before entering the area.

g. Operations in, or the traverse of, a contaminated area while wearing protective clothing should, if practicable, be conducted during night or early morning hours to take advantage of lower temperatures. Direct radiation from the sun should be avoided.

h. When wearing protective clothing on the march, personnel should be allowed more frequent rest periods, especially during hot weather.

i. Personnel required to wear protective clothing during training should, if practicable, be free of infections, fever, recent illness or injury, overweight, previous heat injury, dehydration, and recent immunizations.

CHAPTER 3
IMPERMEABLE PROTECTIVE CLOTHING

Section I. GENERAL

21. Description

a. General. Impermeable protective clothing is made of cotton cloth coated on both sides with butyl rubber. The material does not allow the passage of air through its fabric and therefore provides adequate protection against chemical and biological agents. Although impermeable material is resistant to liquid chemical agents, it may be penetrated by them. For this reason liquid chemical agent should be neutralized or removed as quickly as possible. Impermeable clothing is sufficiently durable to withstand normal use and decontamination in the field.

b. Use. Impermeable protective clothing is intended primarily for protection of personnel engaged in extremely hazardous decontamination work or in other special operations involving danger from spillage or splash of liquid chemical agents. Among those to whom impermeable protective clothing is issued, in accordance with TA 50–901, 50–902, and 50–914, are personnel who work with toxic munitions in toxic plants and agent yards and personnel who decontaminate heavily contaminated areas.

22. Toxicological Agents Protective Outfit

The toxicological agents protective outfit (fig. 14), when worn with a protective mask or other breathing apparatus, protects the individual from small amounts of liquid chemical agents. The outfit consists of impermeable protective coveralls, other items of impermeable clothing, and accessories, including a cooling suit, with cooling cover for the mask hood. An undergarment must be worn under the outfit at all times. The wearer is protected from agent vapors and aerosols when appropriate clothing is worn under the impermeable protective outfit. Depending upon the mission to be performed, appropriate clothing may range from the permeable protective clothing described in chapter 2 to normal field (or environmental) clothing. For example, field clothing is appropriate for wear as a protective undergarment when exposure to liquid nerve or biological agents is anticipated; permeable protective clothing must be worn as a protective undergarment when exposure to blister agents is anticipated. Components of the impermeable protective outfit are listed below.

a. Impermeable Protective Clothing.

(1) Coveralls, toxicological agents protective, M3.
(2) Hood, mask, toxicological agents protective, M3.
(3) Gloves, butyl rubber, toxicological agents protective, M3.
(4) Boots, M2A1 or M2.
(5) Covers, boot, toxicological agents protective.

Note. Boot covers will be worn over all boots except butyl rubber boots. In areas of gross contamination, boot covers will be worn over butyl rubber boots also.

b. Accessories.

(1) Suit, cooling, toxicological agents protective, with hood cooling cover.
(2) Mask, field protective, M9A1 or M9.
(3) Breathing apparatus, compressed air, M15A1 or M15.
(4) Mask, gas, rocket propellant M21.

23. Issue

Toxicological agents protective clothing outfits are not issued as sets; all components must be requisitioned separately.

1 Coveralls
2 M3 Mask hood
3 Butyl rubber gloves
4 Boot covers

Figure 14. Toxicological agents protective outfit.

Section II. COMPONENTS

24. M3 Toxicological Agents Protective Coveralls (FSN 8415–272–3024)

a. Description. The olive drab M3 impermeable protective coveralls are made of cotton cloth coated on both sides with butyl rubber. The coveralls have a 6-inch gusset extending from collar to crotch, with an inner slide fastener and an outer button flap. Other features include an adjustable collar, double sleeve cuffs with adjusting buttons, trouser cuffs with elastic snap bands, and an adjustable belt.

b. Fitting. When properly adjusted, the coveralls provide liquid agent protection for the portion of the body covered. To be effective, the coveralls must fit properly and comfortably. Openings must be closed securely; slide fasteners must be closed completely; and buttons must be in place and fastened. Coveralls are issued in small, medium, and large sizes.

c. Wearing Time.

(1) *Without cooling suit and hood cooling cover.* The maximum wearing time for personnel working in the toxicological agent protective outfit will vary greatly, depending on several factors such as temperature, relative humidity, individual training status, individual physical condition, and the nature of the activity. The maximum recommended wearing time is from 1 to 4 hours, depending on the above variables.

(2) *With cooling suit.* A wet cooling suit (fig. 15), with cooling cover for the mask hood, worn over the impermeable outfit during warm temperatures will contribute materially to the comfort of the wearer and will extend the tolerable working time. The cooling suit may be kept wet with water applied by any convenient means such as a hose, pail, or spray from decontaminating apparatus or by any similar means.

(3) *Field expedient.* When a cooling suit is not available, the protective outfit itself may be wetted or covered with a wetted porous cloth or other porous material. Although this expedient increases wearing times of the protective outfit, it is not as effective as wearing a wet cooling suit.

25. Toxicological Agents Protective Mask Hood, M3

The M3 toxicological agents protective mask hood (fig. 14) is made of the same butyl-rubber-coated fabric as the protective coveralls (par. 24*a*, above). It is designed for semipermanent mounting on the M9A1 field protective mask (par. 30) so that the mask-hood combination will function as a positive-pressure leakproof unit. The hood has three adjustable openings, with attached tie cords, for the mask eyepiece and canister. Butyl-rubber-coated tape is cemented over the sewn seams to prevent leakage through the needleholes. The lower portion of the hood is a two-layer shawl. The inner layer is placed inside the collar of the protective coveralls. The outer layer rests on the wearer's shoulders. The hood shawl is held down on the wearer's shoulders by two adjustable straps which are worn under the arms and are secured in front by snap fasteners.

26. Toxicological Agents Protective Gloves (FSN 8415–753–6552)

The impermeable protective rubber gloves are made of butyl rubber. They are issued in small, medium, large, and extra large sizes and are worn over impregnated cotton gloves (par. 10*e*). The glove gauntlet is placed between the inner and outer cuffs of each coverall sleeve.

27. Boots

The M2A1 knee boots (FSN 8430–820–6295/6306) are made of butyl rubber. The men's black knee boots (FSN 8430–147–1019/1024) are made of rubber and have a plain sole and heel. They are issued to and worn by personnel in technical escort units, explosive ordnance detachments, test units, and chemical agent manufacturing plants. The boots are

also worn by personnel required to enter areas known to be highly contaminated with agent. The boots are worn with the impermeable protective outfit.

28. Toxicological Agents Protective Boot Covers (FSN 8430–262–5297)

a. Description. The boot covers are made of cotton cloth coated with butyl rubber. Alternate layers of cotton duck and butyl rubber make up the outer sole. Tie tapes are located at the top and bottom of the covers.

b. Use. The boot covers are designed to exclude gross contamination from the M2 and M2A1 rubber boots and provide a rapid means for removal of the contamination. In instances when the butyl rubber boots are not available, the boot covers can be worn over natural rubber boots, leather boots, or rubber insulated boots as a field expedient. The covers are held in place by cotton tie tapes. Covers are used in pairs; however, there is no distinction between lefts and rights, all covers being made to the same pattern. When boot covers are worn out or become grossly contaminated, they should be removed and replaced. Boot covers may be decontaminated if they have not been torn, damaged, or grossly contaminated.

c. Fitting. The boot covers will fit over the combat boot, the rubber insulated boot, and the rubber knee boot as follows:

(1) Up to size 6½ use *small* cover.
(2) Size 7 to 11½ use *medium* cover.
(3) Size 12 and over use *large* cover.

29. Toxicological Agents Protective Cooling Suit (FSN 8415–264–2929) and Toxicological Agents Protective Mask Hood Cooling Cover (FSN 8415–261-6443)

a. Description. The impermeable protective cooling ensemble (fig. 15) for wear over the impermeable protective outfit, consists of loose-fitting trousers, a wraparound jacket and a cooling cover for the impermeable mask hood. The items are made of cotton terry cloth. Adjustable suspenders and tie tapes in the trouser cuffs insure a proper fit. The right front section of the jacket is designed to lap over the left front section.* A tie tape is attached to the end of each section, and a small slit is provided in the right side seam of the jacket. Sleeves and back of the jacket are of double-layer cloth to increase the water-

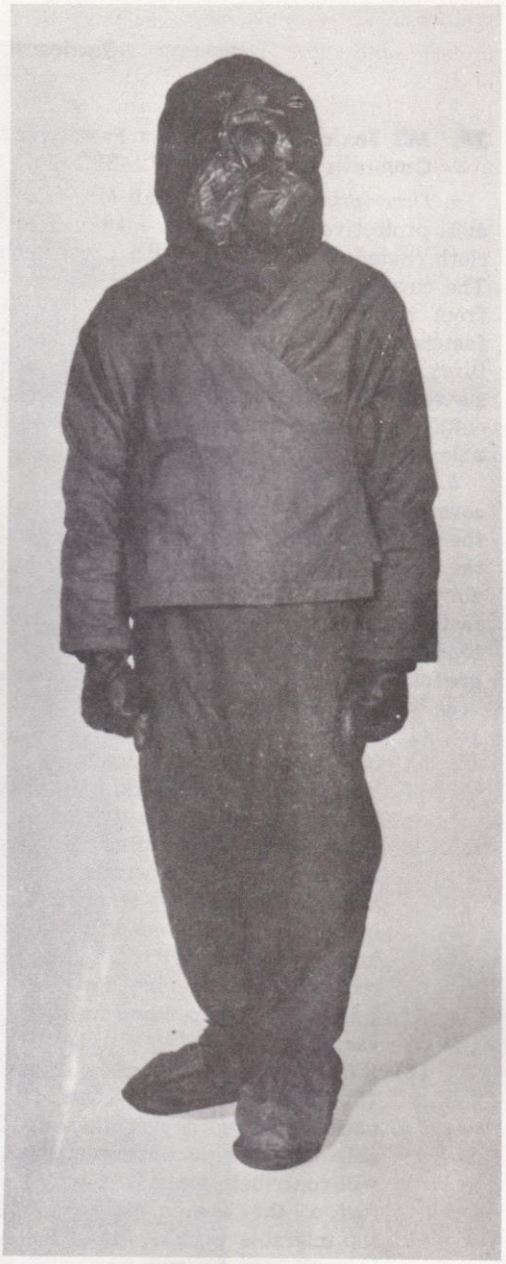


Figure 15. Toxicological agents protective cooling suit, with hood cooling cover.

absorption capacity of the jacket. The cooling cover for the mask hood is worn over the M3 impermeable mask hood. The cover consists of three panels (one in front and two in the back) with flared bottom. There is a cut-out face opening. Three tie tapes are provided for attachment to the hood.

b. Use. The cooling suit with hood cooling cover is designed to utilize the cooling effect resulting from the evaporation of water. It is periodically drenched with water, and the evaporation of the water cools the impermeable outfit underneath. Use of the cooling suit and hood cooling cover permits the individual to wear an impermeable outfit comfortably for much longer periods in warm weather than he would otherwise be able to wear it.

30. Field Protective Mask, M9A1 (FSN 4240–368–6093/6098)

a. Description. The M9A1 field protective mask (fig. 16) has either a right cheek or left cheek mounted canister-type filter unit. The mask is available in small, medium, and large sizes.

b. Use. The mask is designed to be worn with the M3 toxicological agents protective mask hood (par. 25).

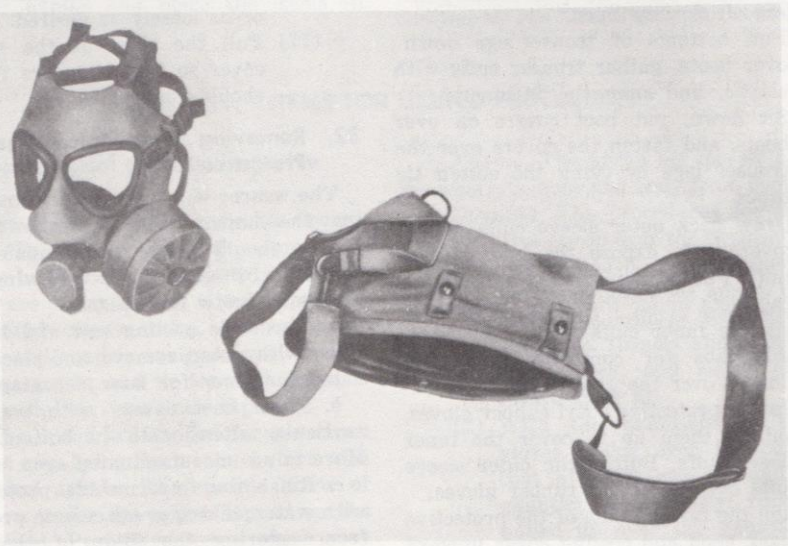


Figure 16. M9A1 field protective mask and carrier.

Section III. WEAR

31. Donning Toxicological Agents Outfit for Agent Protection

a. General. Before putting on the impermeable protective outfit for agent protection (par. 22), fit and mount the protective mask hood on the protective mask (par. 25). Generally, items of the impermeable protective outfit are donned in the following order:

(1) Vesicant agent protective undershirt and drawers.
(2) Impregnated socks.
(3) Butyl rubber boots (M2A1 or M2) or treated combat boots.
(4) Protective coveralls.
(5) Boot covers.
(6) Impregnated cotton gloves.
(7) Protective butyl rubber gloves.

*Right and left refer to the wearer's right and left when wearing the jacket.

(8) Protective mask with protective hood and cooling cover attached.
(9) Cooling suit.

b. Procedures. The procedures for putting on the impermeable protective outfit are listed below in sequence. Assistance will be required to put on and adjust certain items.

(1) Put on vesicant agent protective underwear as described in paragraphs 12 or 18 as appropriate, put on treated combat boots, or M2A1 butyl boots, or rubber knee boots, as required. Unimpregnated underwear may be worn at the wearer's discretion and comfort.
(2) Put on the protective coveralls, leaving all closures open.
(3) Pull bottoms of trouser legs down over boots, gather trouser cuffs with elastic, and snap the fasteners.
(4) Sit down, put boot covers on over boots, and fasten the covers over the trouser legs by tying the cotton tie tapes.
(5) Draw back outer sleeve cuffs of the coveralls to expose the inner sleeve cuffs. Put on impregnated gloves with gauntlets under the inner cuffs. Fasten the inner cuffs with the adjustable tabs for comfortable, tight closure over the gauntlets.
(6) Put on protective butyl rubber gloves, pulling them up to cover the inner sleeve cuffs. Button the outer sleeve cuffs over the butyl rubber gloves.
(7) Roll the rear portion of the protective mask hood and cooling cover upward to expose the head harness of the protective mask.
(8) Put the protective mask on and adjust it as described in FM 21–41.
(9) Unroll the rear portion of the protective hood so that it covers the back of the head and falls into position.
(10) Tuck the inner shawl of the protective hood under the collar of the coveralls; then button the collar.
(11) Drop the outer shawl of the hood over the shoulders, and secure it by passing the shawl straps under the arms and fastening them in the front.
(12) Close the slide fasteners, fasten the buttons, and secure all closures on the coveralls. Adjust and tighten the belt.
(13) Put on the trousers of the cooling suit over the coveralls, snap closed, and adjust the suspenders and trouser cuffs for proper fit.
(14) Put on the cooling jacket and lap the right front section of the jacket over the left front section.
(15) Fasten the jacket by passing the tie tape on the overlapped section of the jacket through the small slit provided in the right side seam of the jacket.
(16) Tie the two tapes at the wearer's back to fasten the jacket as snugly or as loosely as desired.
(17) Pull the skirt of the hood cooling cover so that it covers the neck and shoulder areas.

32. Removing Toxicological Agents Protective Outfit

The wearer will require assistance in removing the impermeable protective outfit. The helper should have on adequate protective clothing. Procedures for removing the outfit are listed below in sequence.

a. Flush the cooling suit and hood cooling cover with water, remove, and place in a designated container for later decontamination.

b. Flush boot covers with water, paying particular attention to the bottoms of covers. Move to an uncontaminated area.

c. Rinse the impermeable protective outfit with water, taking great care to prevent water from entering the filter of the protective mask.

d. Still wearing the butyl rubber gloves, unfasten the coverall trouser cuffs and belt.

e. Unbutton the outer flap and outer sleeve cuffs of the coveralls and carefully remove the butyl rubber gloves, taking care to avoid contamination of the impregnated cotton gloves. Place the butyl rubber gloves in a designated container.

f. Still wearing the cotton gloves, unfasten the slide fastener opening of the coveralls and loosen the drawstring at the top of the gusset.

g. Unfasten the tabs of the inner sleeve cuffs. (At this point, the helper must remove

the protective hood from the protective mask by pulling the hood off from the rear of the head, over the head, to the front of the head.)

h. Wash protective mask with soapy water and rinse with clear water.

i. Slide the coveralls down to the boots, keeping the outer surface of the coveralls away from the underclothing and cotton gloves. With the help of an assistant, step out of the boots and place them in a designated container for later decontamination.

j. When a personnel decontamination center is used, move through the air lock; when a field-type decontamination station is used, move to the next area. Then, remove cotton gloves, socks, liners, and underwear, if worn, in the order named and place the items in designated containers.

k. Take a deep breath and hold it, remove the protective mask and undershirt, if worn. Immediately step under the shower and flush the upper portion of the body *before resuming breathing.*

l. Wash the entire body thoroughly, using plenty of soap; pay particular attention to hairy portions of the body and to the undersides of the fingernails.

m. Leave shower and proceed to the drying area. Dry the body; report to medical personnel and receive first aid, if applicable.

n. Put on clean clothing and leave the drying area.

Note. The helper's clothing must be assumed to be contaminated; the helper should use extreme caution in removing his own items of protective clothing.

Section IV. ITEMS FOR LIMITED PROTECTION

33. M2 Toxicological Agents Protective Apron

a. Description. The M2 impermeable protective apron (fig. 17) is made of cotton cloth coated with butyl rubber on both sides. All sewn seams are cemented and taped to prevent leakage through needle holes. The apron is wraparound style and is equipped with a neck strap at the top rear and tie tapes at the middle rear. The sleeves have draw tapes.

b. Use. The apron is intended for personnel whose duties may bring them into contact with liquid chemical agents. The specific items of clothing worn under the apron depend on the agents involved. Protective items which may be used in conjunction with the apron include protective mask, butyl rubber gloves, protective hood, and leather boots treated with vesicant gas resistant leather dressing or M2A1 rubber boots. Boot covers (par 28) should be worn with the leather boots.

c. Issue. Personnel to whom the protective apron is issued in accordance with TA 50–901, 50–902, and 50–914 include those who work with toxic munitions in toxic plants and agent yards, perform decontamination work in the field, handle contaminated clothing and equipment at field decontamination stations, and handle and treat chemical agent casualties.

d. Fitting. The apron fits loosely and covers the wearer's arms and body from boots to neck.

e. Donning. The procedures for putting on the protective apron over the permeable protective outfit are listed below in sequence.

(1) Before donning the apron, put on the permeable outfit as instructed in paragraph 12. Inspect and adjust the leg, waist, neck, and sleeve closures to insure snug fit.

(2) With the gauntlets of the cotton gloves pulled over the cuffs of the coat or shirt sleeves, and with the gauntlet of the butyl rubber gloves pulled up over the gauntlets of the cotton gloves, thrust the arms into the apron sleeves and adjust the elastic cuffs around the wrists to insure a comfortable and snug fit.

(3) Adjust the shawl of the hood over the neck of the apron. Close the neck of the apron by fastening the button on the right shoulder of the apron in the appropriate buttonhole in the neck strap to provide a comfortable fit. Adjust the tie tapes at the back of the apron for comfort.

(4) If treatment of a casualty is hampered by the wearing of butyl rubber

Figure 17. M2 Toxicological agents protective apron.

gloves, the wearer should first remove the casualty's clothing and then remove his own butyl rubber gloves. The wearer may then continue treatment of the casualty with comparative safety to himself while wearing the protective cotton gloves.

f. Removing. Exercise care in removing the protective apron. Do not permit contaminated surfaces of the apron to come into contact with the wearer's or other individuals' clothing. Move to uncontaminated area and proceed as follows:

(1) Remove the apron before removing the butyl rubber gloves.
(2) With the left hand untie the apron tie tapes and unbutton the apron neck strap.
(3) Withdraw the right arm from the sleeve by inserting gloved forefinger of the left hand under the elastic cuff of the right sleeve, and pulling.
(4) In like manner, use the right forefinger to withdraw the left arm from the sleeve so that the apron falls free from the body.
(5) Place items in designated containers. Remove the impermeable gloves, then remove the cotton protective gloves and place them in a designated container.
(6) Remove mask and hood (if removed at this time) after loosening the drawcord on the mask hood.
(7) Decontaminate mask with soapy water, rinse, and remove. Remove other clothing.
(8) Shower or wash body using plenty of soap and water.

34. Improvised Protective Outfits

In emergencies when impermeable protec-

tive clothing is not available, troops in the field may improvise outfits for protection against CB agents. Items which may be used include lightweight ponchos, butyl rubber gloves, rubber boots, and rubber-coated equipment covers. Improvised items will not provide the same degree of protection as standard protective items; caution must therefore be exercised in the use of improvised items.

APPENDIX A
REFERENCES

AR 320–5	Dictionary of United States Army Terms.
AR 320–50	Authorized Abbreviations and Brevity Codes.
AR 385–32	Protective Clothing and Equipment.
AR 700–62	Chemical Protective Clothing Policy and Utilization of Certain Chemical Corps Units and Equipment in Combat Areas.
DA Cir 40–33	Medical Service Prevention of Heat Injury.
DA Pam 108–1	Films, Transparencies, GTA Charts, and Recordings.
DA Pam 310-Series	Military Publications Index (as applicable).
FM 3–15	Nuclear Accident Contamination Control.
FM 21–11	First Aid for Soldiers.
FM 21–40	Chemical, Biological, and Nuclear Defense.
FM 21–41	Soldiers' Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare.
TM 3–220	Chemical, Biological, and Radiological (CBR) Decontamination.
TM 3–303	Impregnating Set, Clothing, Field, M3; Impregnating Outfit, Clothing, Field, M1; Kit, Testing, Impregnite-in-Clothing M1.
TM 3–409	Impregnating Plant, Clothing, M2A1.
TM 3–522–15	Mask, Protective, Field, M9 and Mask Protective, Field, M9A1.
TM 3–4240–202–15	Organizational, Direct Support, General Support, and Depot Maintenance Manual: Mask, Protective, Field, ABC–M17.
TM 3–4240–218–15	Operator, Organizational, Field and Depot Maintenance Manual: Mask, Gas, Rocket Propellant, M21.
TM 3–4240–219–15	Organizational, Direct Support, General Support, and Depot Maintenance Manual: Mask, Protective, Aircraft, M24.
TM 3–4240–223–15	Organizational, Direct Support, General Support and Depot Maintenance Manual: Mask, Protective Tank, ABC–M14A2.
TM 3–4240–224–12	Organizational Maintenance Manual: Breathing Apparatus, Compressed Air, M15.
TM 3–4240–237–15	Operator, Organizational, Field, and Depot Maintenance Manual: Protective Outfit, Impermeable, Supplied-Air, M5.
TM 3–4240–255–14	Organizational, DS and GS Maintenance Manual: Mask, Protective, Tank, M25A1.
TM 8–285	Treatment of Chemical Agent Casualties.
TM 10–275	Cold Weather Clothing and Sleeping Equipment.
TM 10–279	Protective Clothing for Missile Fuel Handlers.
TM 10–280	Field Laundry, Bath, and Clothing Exchange Operations.
TM 10–8415–204–13	Organizational and DS Maintenance Manual: Rocket Fuel Handlers' Clothing, Toxicological Agents Protective Clothing, Vesicant Gas Protective Clothing, Explosive Handlers' Clothing.

TM 38–750	Army Equipment Record Procedures.
TB 3–4230–207–10	Decontaminating and Reimpregnating Kit, Individual, M13.
TB 3–8030–200–12	Leather Dressing, Vesicant Gas-Resistant, M2.
TA 50–901	Clothing and Equipment (Peace).
TA 50–902	Clothing and Equipment (Mobilization).
TA 50–914	Individual Safety and Protective Clothing and Equipment.
SB 10–523	Size Tariffs for Clothing, Equipage, and Footwear.

APPENDIX B

SPECIAL PURPOSE HOODS AND CLOTHING ITEMS

1. ABC–M5 Tank Protective Mask Hood

a. Description. The ABC–M5 tank protective mask hood (fig. 18) is lightweight and is made of butyl-rubber-coated nylon cloth. An opening in the front of the hood accomodates the lens in the facepiece of the M25A1 tank protective mask (fig. 18) and the facepiece of the ABC–M14A2 tank protective mask. A system of underarm straps, temple straps, neck cord, and fastening cloth is used to hold the hood in position on the wearer's shoulders and neck.

b. Use. The ABC–M5 mask hood is used to cover the head and neck of the wearer. It provides protection against small droplets of chemical and biological agents.

c. Reference.

(1) For information on attaching the ABC–M5 mask hood to the M25A1 tank protective mask facepiece, donning and removing the mask and hood, and maintenance instructions, refer to TM 3–4240–255–14.

(2) For information on attaching the ABC–M5 mask hood to the ABC–M14A2 tank protective mask facepiece, donning and removing the mask and hood, and maintenance instructions, refer to TM 3–4240–223–15.

2. M5 Supplied-Air, Impermeable Protective Outfit

a. Description. The M5 supplied-air impermeable protective outfit (fig. 19) consists of an M4 supplied-air impermeable protective suit made of butyl-rubber-coated fabric, M4 impermeable protective butyl rubber gloves, and M2A1 impermeable protective butyl rubber boots. The outfit is designed so that the junctions between the gloves and the sleeves of the suit and between the boots and the legs of the suit are airtight. Air at low pressure from an external source (not supplied with the outfit) inflates the suit and supplies air for breathing and ventilation. The pressure inside the suit helps to exclude toxic vapors, and flow of air through the outfit carries away heat and moisture released by the wearer's body. The M4 suit is a one-piece suit made of butyl-

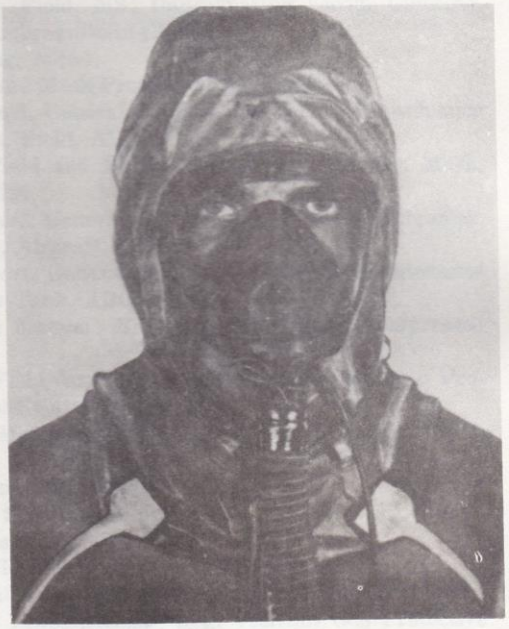


Figure 18. Using ABC–M5 tank protective mask hood with M25A1 tank protective mask.

rubber-coated fabric with an integral headpiece. An opening in the suit extends from the right side of the headpiece to the left hip. The opening is sealed by a zipper combined with a rubber compression seal. A flap of the suit material fastened over the opening by snap fasteners protects the zipper and seal. A plastic eyepiece and a replaceable plastic window are installed in the front of the headpiece. The top of the headpiece is lined with a felt pad, which protects the wearer's head. Studs for snap fasteners are riveted inside the headpiece near the lower corners of the eyepiece. A respirator assembly supplies breathable air to the wearer of the suit when he is not being supplied with air under pressure from the supplied-air system. The respirator assembly consists of a facepiece, a breathing tube, a canister adapter and M11 field protective mask canister. An air inlet manifold is cemented inside the back of the suit. Six rubber air distribution tubes, connected to the nipples on the air inlet manifold, distribute air to the headpiece, the gloves, the boots, and the back of the suit. An air inlet hose, 18 inches long, is clamped to the inlet elbow which projects from the air inlet manifold through the back of the suit. Nine outlet valves (two in the headpiece, one in each sleeve, one in the back of the suit, two near the waist, and one in each leg) are installed in the suit, to promote circulation of air through the suit and to maintain interior pressure. The manifold harness (not shown) consists of the two web shoulder straps and a web manifold strap. The harness supports the air inlet manifold while the suit is being worn.

b. Use. The M5 supplied-air impermeable protective outfit is used to protect personnel in plants where toxic agents are manufactured or loaded into munitions.

c. Reference. For information on the wearing and maintenance of the M5 outfit, refer to TM 3–240–237–15.

Figure 19. M5 supplied-air impermeable protective outfit.

3. M6 Field Protective Mask Hood

a. Description. The M6 field protective mask hood (fig. 20) is made of butyl-rubber-coated nylon cloth. Four reinforced openings in the front of the hood fit tightly around the eye rings and the inlet valve assemblies of the M17 or M17A1 field protective mask. A fifth opening, which has a spring sewed in its lower edge, holds the hood to the voicemitter-outlet valve assembly of the mask. A system of adjustable underarm straps, neck cord, and fastening cloth is used to hold the hood in proper position on the wearer.

b. Use. The M6 hood is a special accessory of the M17 or M17A1 mask. It covers the wearer's head and neck without interfering with the combat helmet and provides protection against small droplets of chemical and biological agents. In very cold climates, the hood can be worn over helmet-type cold weather caps (without stiff visor.)

c. Reference. For information on attaching the M6 hood to the M17 or M17A1 mask, donning and removing the mask and hood, and maintenance instructions, refer to TM 3–4240–202–15.

4. M7 Aircraft Protective Mask Hood

a. Description. The M7 aircraft protective mask hood (fig. 21) fits over the APH–5 aircrewman's protective helmet and is made of butyl-rubber-coated nylon cloth. An opening in the front of the hood fits in back of the inlet stem and around the rubber eyelens frame of the mask. A system of adjusting straps, neck cord, and fastening cloth is used to hold the hood in proper position on the wearer.

b. Use. The M7 aircraft protective mask hood is used with the M24 aircraft protective mask to provide the wearer added protection against small droplets of chemical and biological agents. The hood prevents agent from coming in contact with areas of the head and neck which might otherwise be exposed. The hood can also be used with a winterized mask.

c. Reference. For information on attaching the M7 hood to the M24 mask, donning and removing the mask and hood, and maintenance instructions, refer to TM 3–4240–219–15.

5. M17 Field Protective Mask

a. Description. The M17 field protective mask assembly (FSN 4240–542–4451) includes the mask, carrier, and two lens outserts. The facepiece is made of molded rubber with filter

Figure 20. M6 field protective mask hood.

Figure 21. M7 aircraft protective mask hood.

elements in each cheek, plastic lenses in each eye opening, and voicemitter-outlet valve in front. The mask is supported by an adjustable head harness and is designed to fit snugly on all faces by combining two sizes of faceblanks with two sizes of nosecups. See figures 12 and 13.

b. Use. The protective mask protects the wearer's face, eyes, and respiratory tract against field concentrations of CB agents in the form of gases or aerosols, and protects the face and eyes against contamination from splashes and liquid droplets of the agents.

c. Reference. For information on the use and maintenance of the M17 field protective mask, refer to TM 3–4240–202–15.

6. Protective Clothing for Missile Fuel Handlers

For detailed information on the two ensembles provided for handlers of fuels and oxidizers (full-protection and limited-protection ensembles), refer to TM 10–279.

7. Explosive Handlers' Coveralls

a. Description. The explosive handlers' coveralls (fig. 22) are made of fire-resistant, nonstatic, natural or tinted, neutral, grey-tone cotton sateen cloth with a button front closure and a lattice-laced pocket located on the right hip. The coveralls are issued in sizes X-small, small, medium, large, and X-large.

b. Use. The explosive handlers' coveralls are used by personnel engaged in operations where explosives or other dust hazards may exist. The coveralls usually are worn over general issue clothing. Any combination of safety shoes, boots, protective gloves, flameproof cap, and protective mask and hood may be worn in conjunction with the coveralls to fit the operating situation.

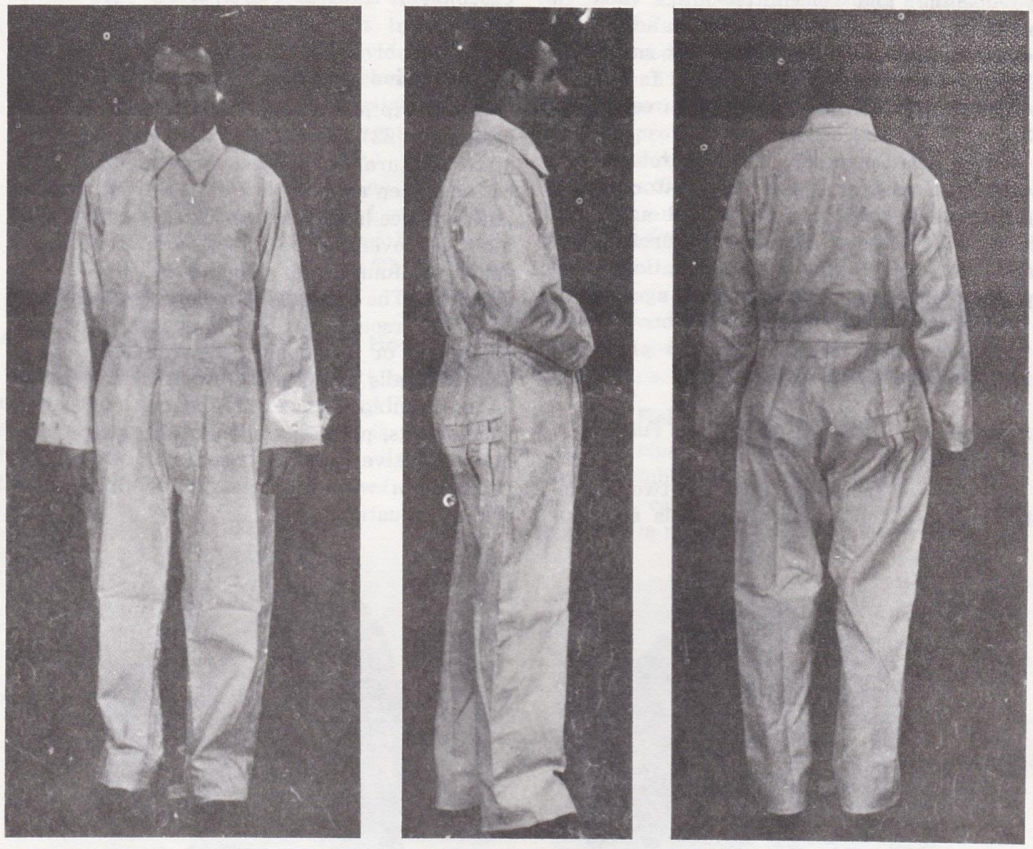


Figure 22. Explosive handlers' coveralls.

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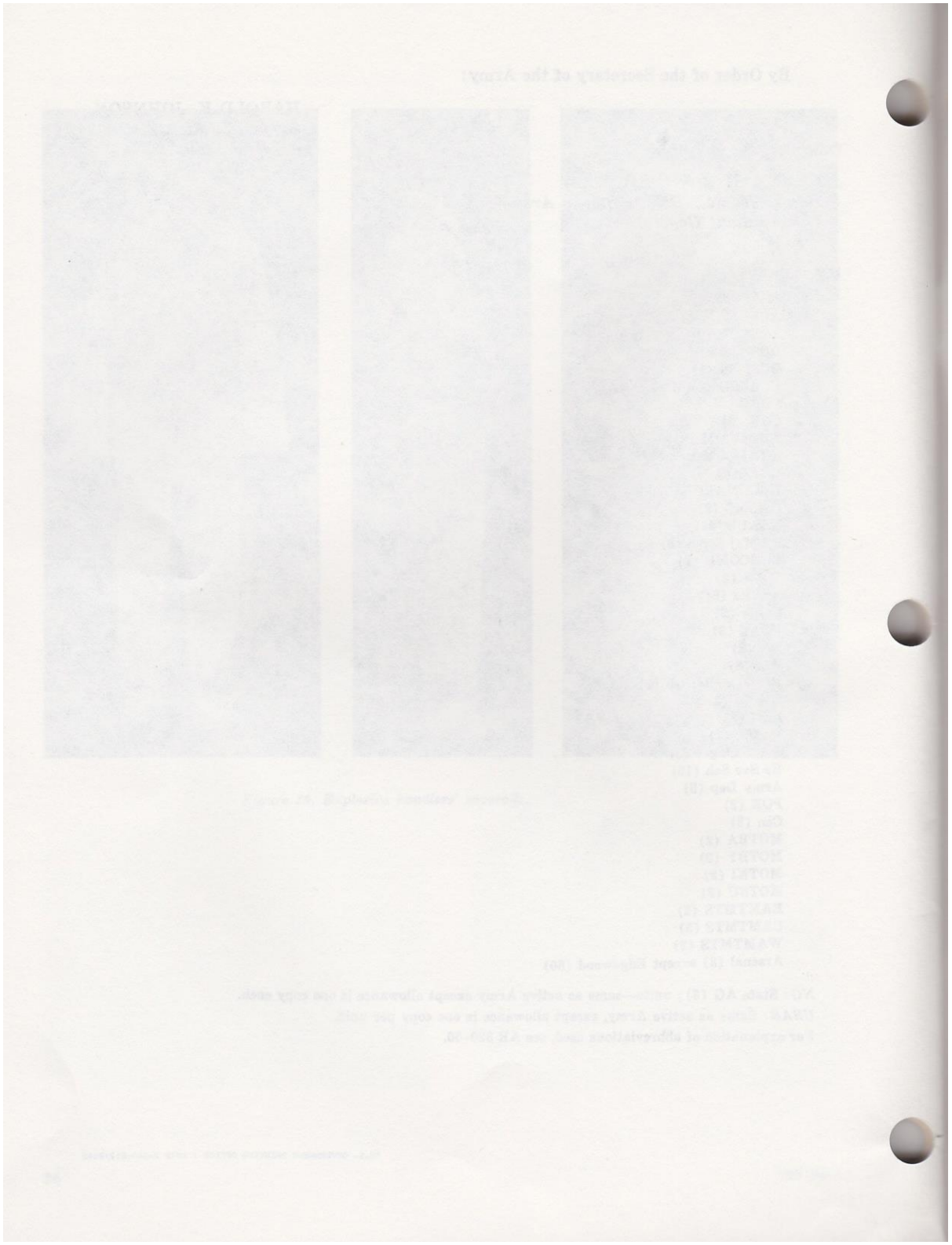

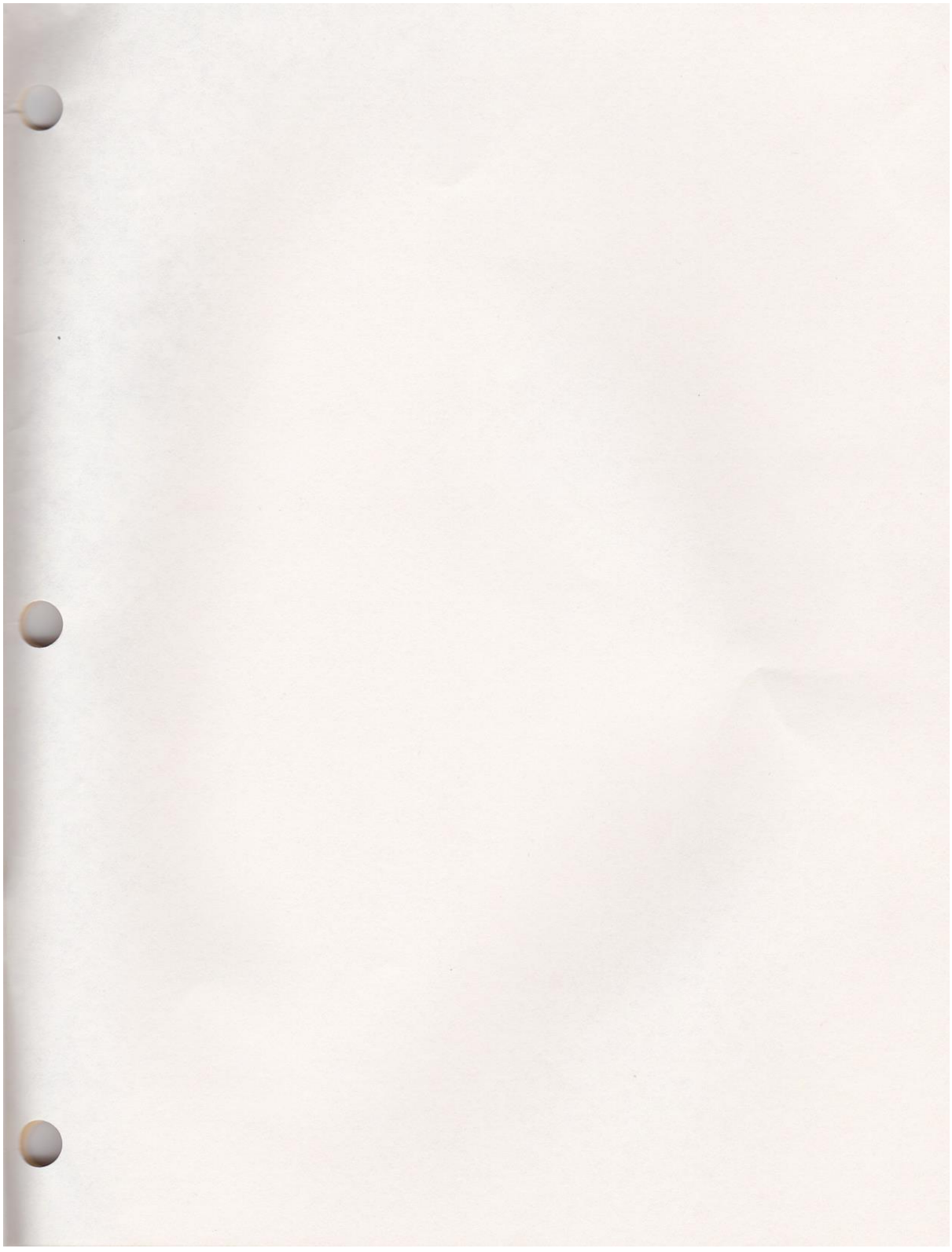

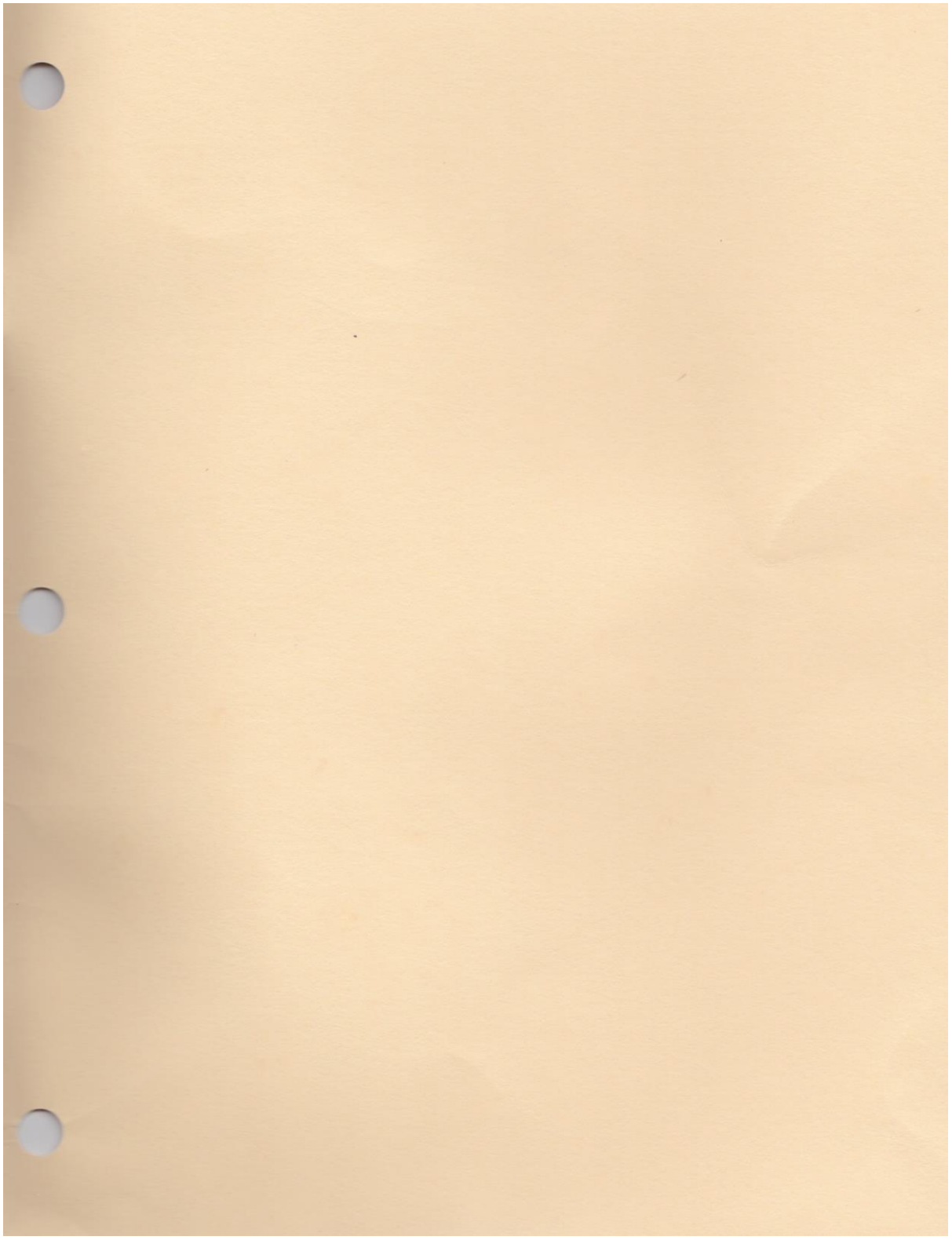

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