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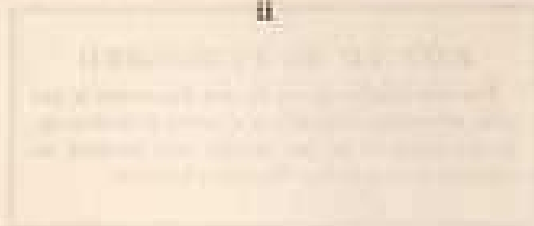
**Field Service Pocket
Book**

Pamphlet No. 8

1939

PROTECTION AGAINST GAS

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By Command of the Army Council,

H. Greedy

THE WAR OFFICE,
4TH OCTOBER, 1939.

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FIELD SERVICE POCKET BOOK PAMPHLET No. 8, 1939

PROTECTION AGAINST GAS

1. Characteristics and effects of war gases

1. *Classification.*—War gases are divided into four groups:
 - i. *Choking.*—These attack the lungs and breathing passages and may cause death.
 - ii. *Nose.*—Nose gases are smokes causing irritation to the breathing passages. They are not lethal.
 - iii. *Tear.*—Which cause the eyes to smart and water, but do not cause death.
 - iv. *Blister.*—These are liquids which give off vapour. Contact with the liquid or continued exposure to vapour will cause blisters to develop. Death may follow exposure of the lungs to high concentrations of the vapour.

2. The following table gives the characteristics and effects of some of the more common gases of these groups. All ranks should know how to recognize these gases and what action should be taken in the event of exposure to or contamination by them.

Gas	Classification	How to recognize	Effects on the body	Actions to be taken in gas attack	First aid	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Chlorine Chlorine Gas	Non-persistent Initial	Invisible, Sweet odour very dry	Coughing, choking sensation, diffi- culty in breath- ing. Later skin changes to a bluish red colour. Cough may cease temporarily, but symptoms may recur up to 24 hours. If no symptoms by then gas has had no effect.	For all choking gases adjust respirator. This gives complete protection	For all choking gases. If gas pre- sented adjust res- pirator. If no respirator place damp cloth over mouth and nose. Remove from contaminated area. Wash, but never use, by abstain or speak- ing. Immediate evacuation to nearest medical post. Do not apply artificial respiration	
2. Phosgene	Slightly persistent Initial	As above	As above			
3. Chlorine	Non-persistent Initial	Small of bluish, Greenish yellow colour	Violent coughing, choking and diffi- culty in breath- ing. No recover- ence when cough ceases. If no symptoms after attack gas has had no effect			
4. Chloroform	Persistent (about 2 hours)	By its effect on eyes and lungs	Tears. Irritation of nose and lungs, followed by sneezing and vomiting			

Major gases
A. D.M., D.V.A. and
D.C.

1. D.M., D.V.A. and D.C.	Non-persistent	By effects after 3-8 minutes	Pales in chest, throat, teeth and head in 3-5 minutes. Feeling of influenza and depression. Vomiting in severe cases	For all major gases. Adjust respirator. Stimulants may be given. Do NOT evacuate casual- ties. They will recover in 3-4 hours	For all major gases. Immediately after adjusting respirator stim- ulants may be given. Do NOT evacuate casual- ties. They will recover in 3-4 hours	
2. D.M., D.V.A. and D.C.	Non-persistent	By its effects	Stinging of eyes, flow of tears, but no damage to eyes	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	
3. D.M., D.V.A. and D.C.	Persistent about 2 hours	Small of pain and effects	As above	For all major gases. Adjust respirator. This gives com- plete protection	For all major gases. Adjust respirator. Stimulants may be given. Do NOT evacuate casual- ties. They will recover in 3-4 hours	
4. D.M., D.V.A. and D.C.	Persistent Days	Small of nose and effects	As above but more severe	All major gases. Ad- just respirator. This gives com- plete protection	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	
5. D.M., D.V.A. and D.C.	Very persistent. Even a few hours to 1 month	Pale skin to ears brownish liquid. Small of colour. De- pression, etc. RED where in contact with liquid	Small of nose and effects	All major gases. Ad- just respirator. This gives com- plete protection	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	

Very gases
A. C.A.P.

1. C.A.P.	Non-persistent	By its effects	Stinging of eyes, flow of tears, but no damage to eyes	For all major gases. Adjust respirator. Stimulants may be given. Do NOT evacuate casual- ties. They will recover in 3-4 hours	For all major gases. Immediately after adjusting respirator stim- ulants may be given. Do NOT evacuate casual- ties. They will recover in 3-4 hours	
2. C.A.P.	Persistent about 2 hours	Small of pain and effects	As above	All major gases. Ad- just respirator. This gives com- plete protection	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	
3. C.A.P.	Persistent Days	Small of nose and effects	As above but more severe	All major gases. Ad- just respirator. This gives com- plete protection	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	
4. C.A.P.	Very persistent. Even a few hours to 1 month	Pale skin to ears brownish liquid. Small of colour. De- pression, etc. RED where in contact with liquid	Small of nose and effects	All major gases. Ad- just respirator. This gives com- plete protection	All major gases. Ad- just respirator. Do NOT evacuate casualties. If gas is in the eye	

Gas (1)	Classification (2)	How to recognize (3)	Effects on the body (4)	Action to be taken in gas attack (5)	First aid (6)	Remarks (7)
10. Lewisite	Very persistent	Smell of geraniums to cress stems. Skin stinging. Lac- tatory tears R.I.C.I. where in contact with liquid.	<p>Papain. Eyes—Pain and redness in 4-5 hours. Temporary blindness. Lungs—No imme- diate effect, cough 9-8 hours after. LADs to pre- vent. Skin—No imme- diate effect; irri- tation in about 12 hours followed by blisters.</p> <p>Liquid. Eyes—Pain, red- ness, closed in 1 hour; permanent blindness. Skin—Innocuous slough, returns in 15 minutes. Mucous membranes—In hour's time and apart. If untreated, may cause death.</p>	<p>Liquid. Adjust respiration and when pos- sible move out of concentration.</p> <p>Liquid and vapour. As above.</p>	<p>Vapour. Wash eyes and nose with cool water. Wash contaminated clothing immedi- ately. Wash skin with soap and water and change clothing if possible.</p> <p>Liquid. As above. There should be no contact with contaminated clothing or equipment.</p>	(7)
			<p>Papain. Chest—In crease in respiration rate and coughing. Lungs—No immediate effect. Skin—No immediate effect. Mucous membranes— In 15 minutes may cause death.</p>			

2. Means of recognizing gas weapons

1. *Cylinders*.—When gas is emitted from cylinders a loud hissing noise can be heard for some hundreds of yards. Their employment is dependent on the direction and strength of the wind.

2. *Projectors*.—A loud explosion can be heard when they are fired. The drums can be seen in the air and makes a whishing noise during its flight. The noise of burst is small. Range up to 2,000 yards. A stream of sparks can be seen by night.

3. *Generators*.—When set off smoke is visible for some distance but the first effects of the gas may be the only other warning.

4. *Mortars, shell and air bombs* all make little noise on bursting and should not be mistaken for "duds".

3. Personal anti-gas equipment

1. *General*.—Every individual is personally responsible for his own protection against gas. He should be capable of recognizing the war gases (see Sec. 1) and is provided with articles of equipment for his protection and personal decontamination (see Sec. 7, 3).

2. *Personal equipment*, which is carried by every individual in the field, consists of the following:—

- Respirator.
- Eye-shield, anti-gas.
- Cap, anti-gas.
- Detector, gas, individual.
- Ointment, anti-gas.
- Cotton waste.

In addition officers and N.C.Os. carry one pad of detectors, gas, ground.

3. *Respirator*.—

i. Method of fitting.

Stage 1—Preliminary adjustment.

(a) Issue a normal size respirator, slacken off all the elastic bands of the head harness, so that the ends are about one inch from the buckles, and then instruct the wearer to put on the respirator.

(b) Tighten each of the elastic bands, so that the facepiece is held firmly but comfortably in contact with the skin, with all the bands exerting an equal pull. The wearer's chin must fit closely into the chin of the facepiece.

Stage 2—Examination of size.

Examine whether the size is correct. If the wearer's eyes appear approximately midway between the top and the bottom of the eyepiece, the size is correct.

If the eyes are much below the centre of the eyepieces in a normal size, it must be exchanged for a small size; if much above the centre in a normal size, a large size is required.

Stage 3—Final adjustment of correct size.

Examine under the chin, then round the cheeks, temples and forehead to ascertain that the facepiece is firmly on the face.

Stage 4—Test for gas tightness.

Squeeze the connecting tube so that no air can be drawn through it. Instruct the wearer to attempt to breathe in. If the facepiece is drawn on to the face, and no air can be drawn in round the side of the facepiece, a gas-tight fit has been obtained.

If the wearer can draw air in round the facepiece, further fitting or adjustment is required. After men have been fitted correctly, a roll will be made giving the man's name and size of facepiece.

NOTE.—Personnel should be tested in a gas chamber as soon as possible after they have been fitted.

ii. The most serious causes of damage are:—

- (a) Water entering the container and affecting its efficiency.
- (b) Injury to the outlet valve, which might allow direct entry of gas into the facepiece.
- (c) Injury to the rubber facepiece or the elastic head harness.
- (d) Prolonged storage in the haversack, causing permanent distortion of the facepiece or connecting tube.
- (e) If the haversack requires cleaning, only "Mills equipment cleaner No. 700" or "Pickering's equipment cleaner, khaki colour" may be used. Scrubbing with water or the use of other cleaning material are forbidden, as they may destroy the waterproofing of the haversack. Oil stains can be removed or partially removed by prolonged application of a paste made from the approved cleaning preparation.

iii. Inspection.

Inspections will be carried out at frequent intervals by the company, etc., officer, who will ensure that respirators are in a serviceable condition.

Respirators found to be faulty will be dealt with as laid down in sub-para. iv, below.

Method of inspecting respirators.

The facepiece and container will be removed from the haversack for inspection and the parts will be examined in the following order to ascertain that:—

Facepieces.

- (a) The elastic bands are not unduly weak and the head pad is sound, the buckles, tags and loops are firmly attached and function correctly.
- (b) The facepiece material is neither torn nor perished. Hold up to the light and examine, by stretching gently, for small holes.
- (c) The eyepiece discs are not damaged and rims are securely bound to the facepiece. In later issues of Mark IV and in the Mark V the screwed rims are securely gripping the disc and the rubber washer is not perished. Cracks in the discs do not permit the entrance of gas, but may interfere with vision. Air-markings sometimes appear at the edge of the eyepiece discs, but eyepieces should not be condemned for small markings that do not interfere with vision.
- (d) The metal valve holder is not damaged and is securely bound into the facepiece.
- (e) In facepieces, Mark IV and V, the valve guard has not been damaged and the nut and split pin or the captive nut are in position. (The valve guard and valve must not be removed.)
In facepieces Mark IV later issues, and in Mark V if a green outlet valve (No. 2, Mark II) is fitted, the check plate is in position.
- (f) The connecting tube is sound and securely attached at both ends and there are no signs of rust on the tape or binding wire. If the container is attached at the wrong angle, the connecting tube may twist or become kinked and the facepiece will not stay on the face properly. Hold the facepiece up by the valve holder, letting the container hang freely in order to see that the container is in the correct position relative to the facepiece, i.e., when the facepiece is adjusted, the container hangs with its flat side against the body. With type E containers ensure that the slots are facing the haversack partition.

Container.

- (g) The container is without holes or heavy dents, is reasonably well protected by paint and is free from rust. See that the neck of the container is securely attached to the body. Slight looseness of the contents unaccompanied by heavy denting is not serious. With containers type A look for rust on the valve seating, remove the seating (a coin may be used as a lever) and examine the interior of the container. See that the inlet valve is in position and is not perished.

Testing the valves.

- (h) To test the inlet valve.—First adjust the respirator and close the outlet valve. In the facepieces, Mark IV or V the valve is best closed by pressing a cloth over the valve guard, thus blocking the exit of air. Breathe out strongly. A defective inlet valve will be indicated by a leakage of air through the container. A slight leakage through the inlet valve is not a cause for replacement. Defective inlet valves of the container type A, Marks II-III, may often be made good by softening the rubber disc by working and warming in the hand and reversing the position of the pin.
It is always possible to force the air to escape between the edge of the facepiece and the face, but a defective inlet valve will allow air to escape before this lifting of the facepiece occurs.
- (i) To test the outlet valve.—First adjust the respirator. Close the connecting tube by pinching it and test for leakage by attempting to inhale. There must be no sign of leakage through the valve. See that it is possible to breathe out through the valve.

Haversack.

- (k) Examine the haversack to see that there are no holes in the canvas and that all components are securely in position and undamaged. See that the anti-dimming outfit is present and that the composition is not exhausted.

iv. Repairs to be carried out by units.

The following are the only repairs to respirators that will be carried out by units:—

Facepiece.

- (a) Replacement of the head harness.

- (b) Restitching of the fabric of the facepiece or connecting tube.
- (c) Re-wiring the connecting tube at either end.
- (d) Replacement of eyepiece discs in Mark IV, late issues and in Mark V.
- (e) Replacement of outlet valve in Mark IV and Mark V. Container.
- (f) Changing the container.
- (g) Changing the inlet valve, inlet valve seating or split pin of the type A container.
- (h) Replacement and adjustment of inlet valve in type "E" containers.

Haversack.

- (i) Replacement of the whipcord.
- (k) Restitching of the canvas.*
- (l) Replacement of metal parts by restitching.*

Other repairs.

Repairs other than the above will be done by the R.A.O.C.

v. Normal disinfection.

When carried out.

The normal procedure for the disinfection of respirators will be carried out on the following occasions:—

- (a) At least twice yearly—more frequently if ordered by the company, etc., commander.
- (b) On every occasion when the facepiece changes ownership.
- (c) Before facepieces are dispatched to, or after their receipt from the R.A.O.C.

vi. Disinfection—Epidemics or infectious diseases.

When carried out.

If an epidemic or infectious disease occurs, the facepieces of all personnel suffering from the disease and those in contact with them (as ordered by the medical officer) will be disinfected.

4. Eye-shields: detectors, gas, individual, and capes are issued primarily for protection against aircraft spray and should habitually be worn in the open. Capes should normally be in the "alert" or "warn" position. They should only be "rolled" when specially ordered.

*Note.—These repairs are only practicable where men trained as saddlers are available.

The detector, gas, individual, changes to a red colour where drops of spray fall on it. The mark on the detector denotes the smallest sized drop that will penetrate outer clothing and cause blisters. This is called a "large drop."

Ointment, anti-gas, is carried for personal decontamination; its employment is given in Sec. 7, 3.

4. Unit anti-gas protection and equipment

1. *General.*—Collective protection includes the organization of a warning system of sentries, detectors and gas alarms, and tactical measures such as the marking of contaminated areas, alternative positions, dispersion and the use of cover as a protection against air spray. P.A.D. schemes should be worked out for standing camps, and gas cleansing centres organized. A specimen lay-out for such a centre is shown on page 19.

2. *Gas alarm signals.*—i. *Local alarm.* A wooden rattle is issued to all platoon and equivalent sub-unit H.Q. for this purpose.

The rattle will be sounded by the gas sentry to give warning to those in the immediate vicinity of the presence of gas other than aircraft spray. Those within hearing should adjust respirators having first carried out personal decontamination if contaminated by liquid blister gas.

ii. *General alarm.* A hand operated siren issued to all company and equivalent H.Q. On the order of the commander a continuous blast will be sounded to denote a gas attack, other than aircraft spray, of sufficient intensity to affect neighbouring units. Respirators will be adjusted by all who hear it. The signal will not be taken up by those outside the hearing of the local alarms until the commander is sure it will affect the area for which he is responsible.

iii. *Spray alarm.* This is a series of short blasts on the general alarm siren. The individual should take cover if possible, examine his individual detector, and carry out personal decontamination if necessary.

The respirator should not be adjusted unless vapour can be smelt.

iv. *All clear.* Two long blasts on the whistle repeated at five-second intervals. This signifies that individuals may test for gas and remove respirators if it is safe to do so.

3. *Vehicle equipment.*—Detector paint is issued for all vehicles, and should be applied in an 18-inch square on the bonnet or some other place that the driver can see. The paint turns red where drops of liquid blister gas fall on it.

After contamination it should be cleansed with petrol or paraffin before repainting.

4. *Bags, anti-gas.*—These are carried in all vehicles and are for the removal of contaminated clothing. Each bag will hold six complete outfits.

5. *Detectors, gas spray.*—Carried in unit transport. These are metal frames with slots into which detector paper can be fitted. Two pads of these papers are issued with each frame. The paper will turn red where contaminated by liquid blister gas. For use see Sec. 5.

6. *Signs, warning, gas.*—Carried in unit transport. They are triangular pieces of metal painted yellow on one side and white with the word *gas* in red on the other.

They are for marking contaminated areas and should be placed 20 yards from the area with the yellow side towards it. The date and time should be marked on the sign before being placed in position.

7. *Pathway, anti-gas.*—This consists of a light oiled fabric which may be laid down to enable personnel to cross a contaminated area.

8. Bleaching powder is carried in unit transport for decontamination purposes.

5. Protection in camps and bivouacs.

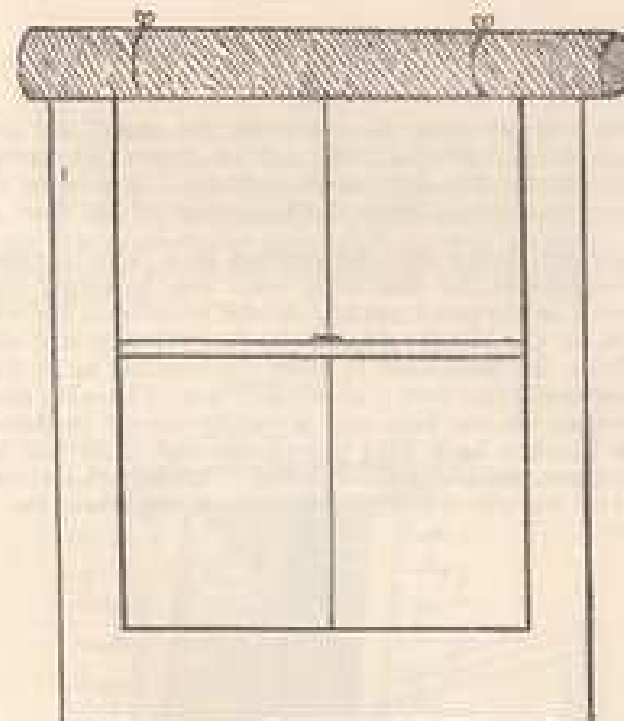
General.—All possible use of shelter provided by trees and woods should be made.

Detectors, gas spray, should be in position at all times and be arranged in groups of nine so as to form a square of about 18 inches.

These groups will be placed at 80 yards interval and distance throughout the area. A gas sentry will be detailed for every three or four groups of detectors and will visit each group at ten-minute intervals. In order that he may inspect his groups in darkness he should be provided with a torch.

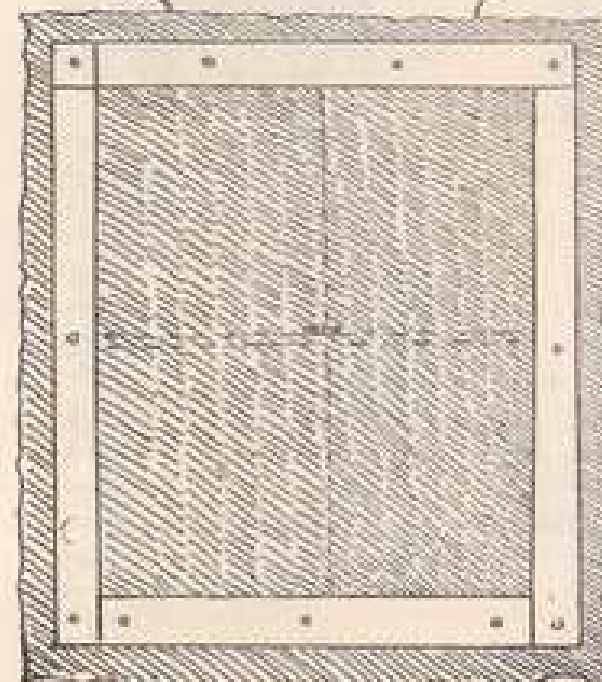
6. Methods of gas proofing

1. *Windows.*—Fig. 1 shows one method of gas proofing windows. Treatment of the gas proofing material with heavy oil will increase the protection. Water should only be used as a last resort, and requires frequent renewing.



A—Curtain rolled.

Note.—Battens and bolts, for sides and bottom, placed inside rolled blanket.



B—Curtain in position.

2. *Doors.*—Doors may be rendered gas proof by fixing strips of suitable material (felt, rubber, baize, blanket) all round the edge of the door or door frame; a wooden strip may be necessary in addition at the bottom of the door.

Alternatively doors may be treated in a way similar to that recommended for windows, with the following modifications:—The gas proof curtain should be outside the door; the batten on the handle side of the door should end about five feet from the floor level to allow the blanket to be raised by a person using the door; about one foot of blanket should be left trailing on the floor and a weight should be fixed to bring the blanket back into place after the door has been used. In cases where the door opens outwards, the material forming the curtains should be increased to allow for this (see Fig. 2).

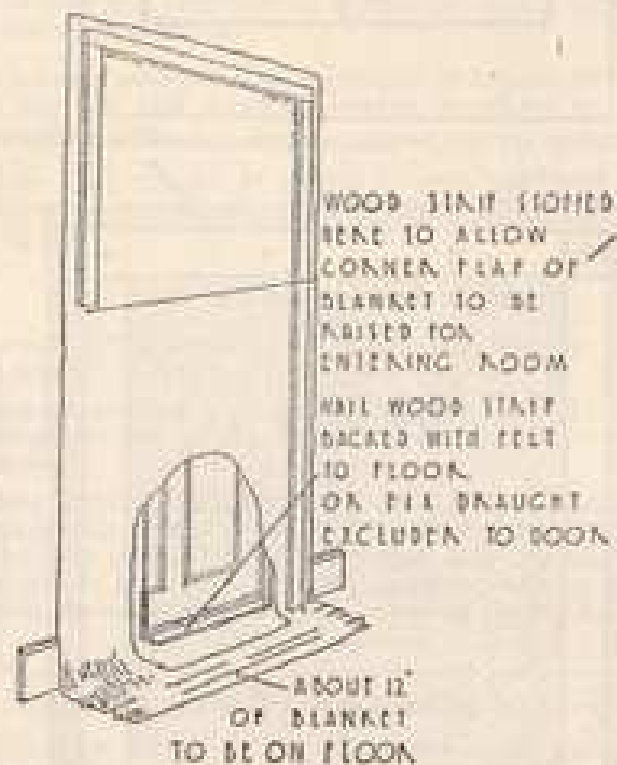


Fig. 2.—Gas protected room.

3. *Air locks.*—Fig. 3 shows one method of construction, by setting up two blanket curtains across the entrance passage. The curtains should be at least four feet apart; ten feet should be aimed at to give greater protection and to allow for a stretcher case with bearers to enter. The best arrangement is for the blankets to rest on inclined frames to ensure a close fit.

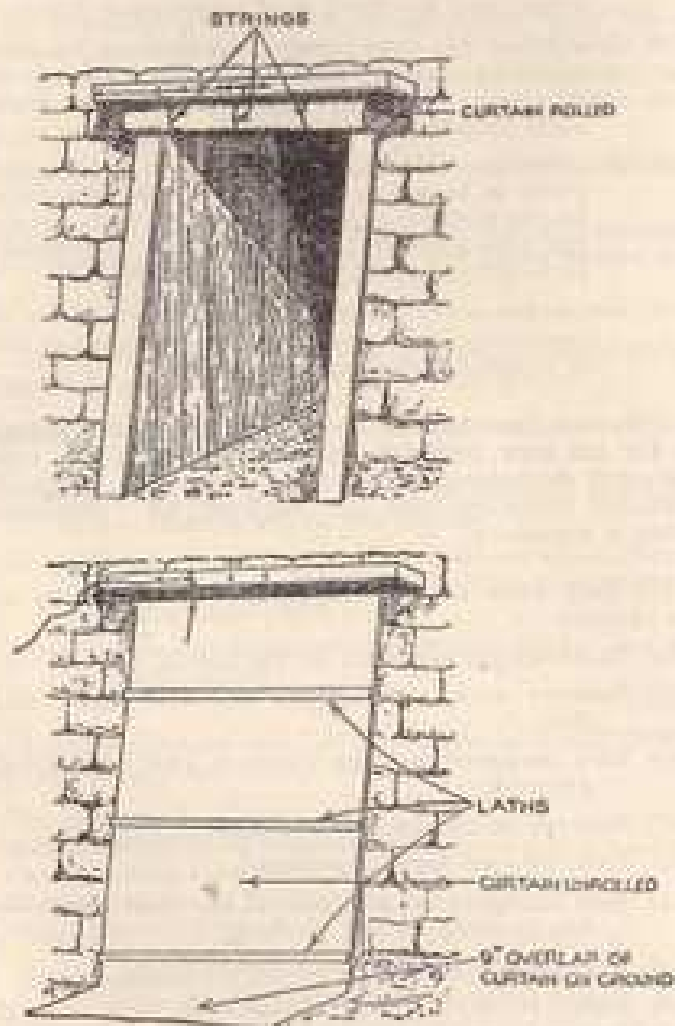


Fig. 3.—Air lock.

7. Decontamination

1. *Definition*.—A decontamination centre is a place where the decontamination of clothing or equipment is carried out.

A gas cleansing centre is for the cleansing of unwounded personnel.

2. Principles to be observed in dealing with blister gases :—

I. *Avoidance* is assisted by the marking of contaminated areas, and by the use of alternative routes.

II. *Limitation of spread* may be obtained by care in avoiding contact with any contaminated object or area. Warning signs are issued to assist in such avoidance.

III. *Weathering*.—The effect of weather on persistent gases is to cause evaporation. Before deciding on the method of decontamination to be employed the practicability of allowing the contamination to weather must always be considered.

iv. *Decontamination* should only be resorted to when weathering is impracticable, or the area or article is urgently required.

3. *Personal decontamination*.—Every individual is responsible for his own personal decontamination. The essence of personal decontamination is the immediate application of anti-gas ointment and the removal of contaminated clothing if necessary.

i. For any form of contamination other than by small drops of spray :—

- (a) Rub anti-gas ointment on the hands.
- (b) Remove with cotton waste any free liquid on the skin.
- (c) Rub ointment on any exposed part that may be affected.
- (d) Remove or cut away contaminated clothing.
- (e) Take off eye-shield if affected.
- (f) Rub ointment on any part of the skin where liquid has penetrated the clothing.
- (g) Wipe off all ointment with cotton waste.
- (h) Adjust fresh eye-shield (if required).
- (i) Put on fresh clothing if necessary and available.
- (k) Put on new individual gas detectors.

ii. For contamination by small drops of spray :—

- (a) Rub ointment on exposed skin.
- (b) Take off eye-shield.
- (c) Wipe off ointment except from hands.
- (d) Put on new eye-shield.
- (e) Change detectors or mark old spots.
- (f) Wipe ointment off hands.

If the situation permits, men should move out of the contaminated area before carrying out personal decontamination. Should this not be possible rifles and equipment must not be laid on the ground whilst carrying out the decontamination of the person.

If clothing is not to be removed personal decontamination can be carried out while on the move.

Ointment should not be smeared on the skin as a precaution against possible contamination as it will cause severe irritation.

iii. The following is a guide to the usefulness of anti-gas ointment as an antidote to liquid mustard gas :—

If applied within five minutes of contamination—Blisters will be prevented.

If applied within five to fifteen minutes of contamination—Blisters will be less serious.

If used between fifteen minutes of contamination and before the skin begins to redden—Ointment will still have some effect.

After reddening has started—Do not apply, but wash skin with water.

iv. Liquid mustard gas in the form of small drops of spray will penetrate :—

The skin in 2 minutes.

S.D. clothing in 10 minutes.

Capes, anti-gas, in 14 hours.

Upper of boots in 3-4 hours.

Stout soles of boots in 24 hours.

A strong concentration of vapour will percolate through clothing in about 30 minutes.

In the case of Lewisite the above times will be considerably less.

4. *Gas cleansing centres*.—All personnel in the field are responsible for their own personal decontamination from the effects of blister gas (*see* para. 3, above).

In rear areas, where P.A.D. schemes are in force gas cleansing centres as shown in Fig. 4, may sometimes be organized for the cleansing of unwounded personnel who are contaminated, and do not possess the necessary personal equipment to carry out personal decontamination.

In billets, camps, etc., it may often be possible to allot a room for the changing of contaminated clothing, where bleach baths and shower baths may be provided.

In static conditions contaminated men may be sent to points at which clothes can be changed, and washing facilities are available. Among deployed units, however, it will seldom be possible to do more than decentralize reserve clothing to sub-units.

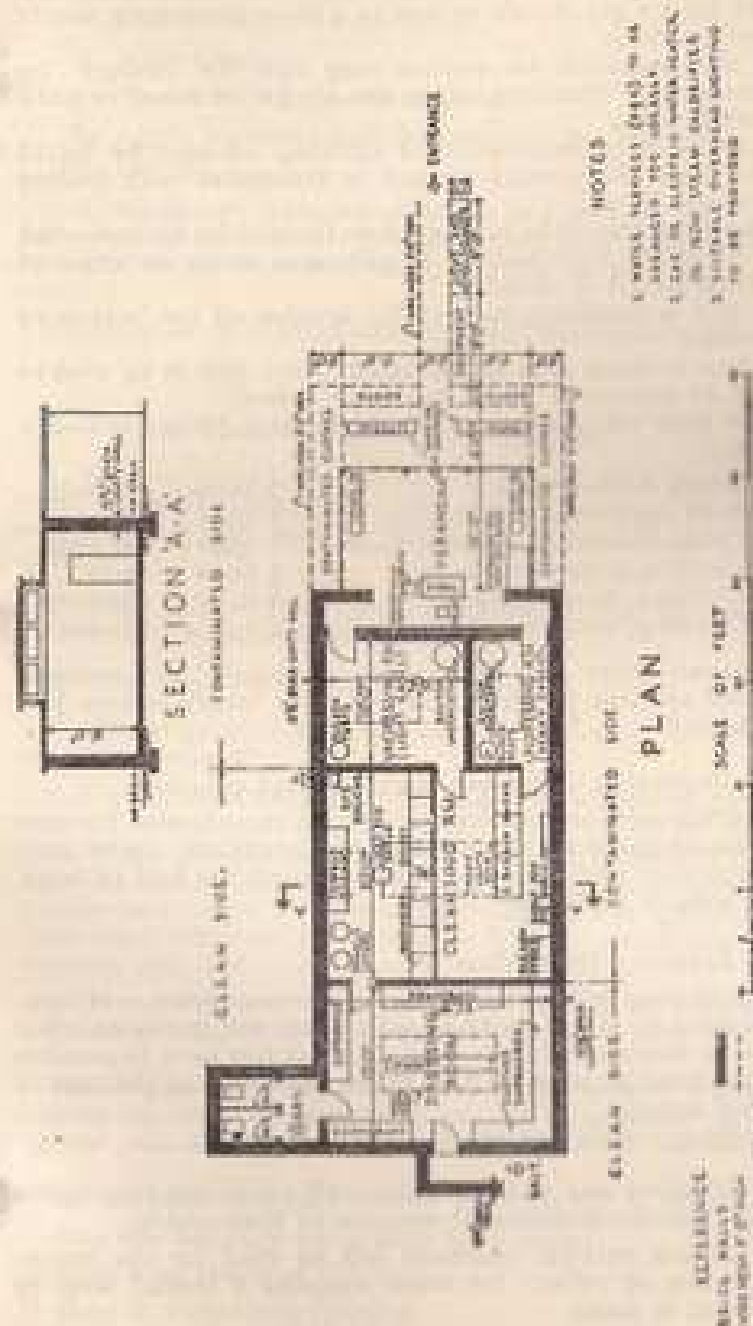


Fig. 4—Gas Cleansing Centre.

5. *Clothing and equipment*.—When contaminated by liquid blister gas should be sent to a decontamination centre in anti-gas bags.

If contaminated by vapour they can be cleaned by "weathering" (hanging out in the air for 24 hours or until the smell goes).

For the decontamination of clothing affected by liquid blister gas, the normal method is treatment with boiling water (see Note).

The water should be boiling before the articles are immersed and should be kept boiling. 1½ gallons of water are required for each pound of clothing.

A grid is necessary to keep the articles off the bottom of the boiler.

When washing soda is advocated, 2 ozs. should be used to every 10 gallons of water (see table below).

The time various articles should be kept boiling is shown below.

Boots, rubber, knee	2 hours	No soda.
Web equipment and canvas ..	1 hour	Soda.
Ground sheets and waterproofs ..	1 hour	No soda.
Clothing cotton and linen .. .	½ hour	Soda.
Clothing, woollen (clean) .. .	1 hour	No soda.
Clothing, woollen (greasy or oily)	2 hours	No soda.

Notes.—Suits and anti-gas capes should be immersed for half an hour in water, without soda, which is kept just off the boil.

6. *Respirators*.—Remove container and eyepieces.

Boil facepiece and connecting tube for three hours. Remove any liquid gas from the eyepiece and container, apply anti-gas ointment and remove. Boil haversack for half an hour. Add soda if available.

7. *Leather*.—Do not boil.

Weathering will rectify vapour contamination. If contaminated by drops, soak in cold water for one hour, then place in water which has been made as hot as it is possible for the hand to bear for four hours (six hours in the case of service boots).

Remove and dry naturally.

8. *Weapons and metal articles*.—All ranks are responsible for the decontamination of weapons in their charge.

Personal anti-gas ointment will be used for the decontamination of rifles; for other weapons a special issue of ointment is made.

When decontaminating a rifle:—

- i. Rub ointment on the hands.
- ii. Remove sling.
- iii. Swab off gross contamination.
- iv. Apply ointment and remove after ten minutes.
- v. Oil rifle.
- vi. Again rub ointment on hands and remove.

If petrol or paraffin are available they should be used for all metal work, ointment being applied to the woodwork only.

All weapons and metal articles should be similarly treated.

8. First aid treatment for animals

1. *Choking gases*.—Put on nose bag lined with damp hay, move animals slowly out of contamination. Excessive movement or the lightest work will aggravate their condition.

2. *Nose gases*.—Have little effect on horses, etc. Brush and wash coat as soon as possible.

3. *Tear gases*.—Animals not affected.

4. *Blister gases*.—As with humans success depends on the speed of treatment.

i. Fix the tail after lightly dusting with bleaching powder.

ii. When the contaminated area cannot be defined brush into the skin, all over the body, a paste made of bleaching powder and water. Continue applying for five minutes and then wash off. As this paste is irritant avoid the eyes, nostrils, and lips.

Alternatively scrub with water, soda and soap for twenty minutes using plenty of water, or hose down with water.

iii. Irrigate the eyes freely with water or with a solution containing one teaspoonful of salt or bicarbonate of soda to one pint of water. Continue irrigation for ten minutes.

iv. *Respiratory tract*.—Plenty of fresh air is required.

Rug and bandage up to keep body warm.

Feed from the floor.

Nostrils frequently sponged.

v. If it is suspected animals have eaten contaminated fodder, feed as much as possible. Later when animal is off his feed tempt with boiled feeds, carrots and green food. Linseed and oatmeal gruel should be given.

vi. *Legs*.—Smear legs with bleach paste or anti-gas ointment paying particular attention to hollow of heel. If bleach powder is not available wash down with petrol or water.

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