

## GAS AND ANTI-GAS PRECAUTIONS.\*

### FIRST AID FOR GAS CASUALTIES.

#### General Organisation.

The treatment of gas casualties will be part of the duties of the general organisation responsible for the control, transport and treatment of all civilian casualties resulting from hostile attack. The plans of such an organisation must be based on the assumption that there will be casualties resulting from the use of high explosives and that there may also be gas casualties. In preparing schemes, therefore, and in planning the arrangement of first aid centres, a large measure of elasticity is essential to ensure that they are suitable for whatever conditions arise.

It may be extremely difficult, if not impossible, to separate gas casualties from those due to other causes when first handling them. Persons who have been injured by splinters or falling masonry may also be contaminated with mustard gas, and will therefore receive further injury unless action is taken to decontaminate them. Should mustard gas, or lewisite, be used in any quantity, there will probably be large numbers of persons who will require decontaminating, and in certain cases some medical treatment will be necessary. Persons whose clothing has been contaminated by liquid mustard gas, or lewisite, should remove the contaminated garments and obtain a bath and change of fresh clothing as quickly as possible. If this procedure can be followed within about 20 minutes, serious injury may be avoided. The risk of injury will be much reduced if outer garments, overcoats, wraps, mackintoshes, jackets, etc., which are known to be contaminated, are removed immediately. In the majority of cases contaminated persons cannot return to their homes and obtain the necessary treatment within 20 minutes, and therefore public decontamination centres will be required.

The combination of the first aid centre with the decontamination centre has so many advantages that this arrangement is strongly recommended where possible.

It is not anticipated that these centres will be called upon to deal with persons who require immediate surgical treatment. Such cases will require transporting in ambulances, and can therefore be taken direct to hospitals which are provided with the necessary facilities. This will, however, involve the provision of decontamination facilities at these hospitals, because they will have to accept cases which, in addition to their physical injuries, are contaminated by mustard gas.

It will also be desirable that patients requiring prolonged hospital treatment should be removed as early as possible to hospitals situated away from populous areas specially liable to air attack. These hospitals are referred to as base hospitals.

From the foregoing description it will be seen that an organisation on the following general lines will be required:—

- (1) First aid parties working in conjunction with an ambulance transport service.
- (2) Combined first aid and decontamination centres within easy access of everyone.
- (3) Provision of additional decontamination arrangements at the hospitals for cases taken there direct.
- (4) Base hospitals to which casualties can be evacuated from those rendering first treatment.

#### The Collection of Gas Casualties.

The principal difficulty is to decide quickly who are gassed, and who are not. Many may think that they have

been gassed, but it does not follow that they have received injury or require treatment; they may have merely smelt a trivial concentration of gas in the air. It is often not an easy matter to reach a decision, but the following facts should be borne in mind.

The gases used in warfare can only attack the parts of the body with which they can get in contact, viz., the eyes, the breathing passages (nose, mouth and throat) and lungs, and the skin. In actual practice the only gases that can attack the skin are the so-called "blistering gases," e.g., mustard gas and lewisite. Although the warfare gases have in many instances distinct smells which can be recognised by those who are acquainted with them, these may be masked to some degree by the fumes from high explosives or smoke from burning buildings. Quite apart, however, from the question of smell, the immediate symptoms which result from exposure to significant concentrations of gas may be suggestive of the general nature of that gas. Thus violent stinging of the eyes, followed at once by so profuse a flow of tears as to render vision practically impossible for the time being, suggests "tear gas." Tingling discomfort in the nose and throat rapidly increasing to gnawing pain suggests a "nose irritant" or "arsenical smoke." A definite choking or suffocating sensation accompanied by violent coughing or a strong tendency to cough (and probably by some irritation and watering of the eyes) suggests a "lung irritant."

But in trying to decide whether or not a person who complains of gas has really been exposed to a concentration that matters, a great difficulty arises in the case of the "blistering gases" since, as will be shown later when symptoms are described in greater detail, no noticeable effects are produced at once, but only develop slowly, especially in the case of mustard gas. In these circumstances the only practical method by which the presence of the gas can be at once detected is by the sense of smell, and if a definite and persistent mustard- or garlic-like smell (mustard gas), or a smell resembling that of geraniums (lewisite) is detected in any locality, the presence of one of the blistering gases should be assumed and precautions taken accordingly. If actual drops or splashes of liquid smelling similarly are noticed on the clothing, that clothing must be regarded as contaminated.

Whatever the nature of the gas the first and most important thing to do is to remove any person who may have been affected by the gas from the risk of further exposure. If it is not possible to take such a person right away from the affected locality, he should be placed to windward of the gas-contaminated area, or in a room into which gas cannot penetrate. If it is impossible to move a wounded casualty, remember that a gas mask, if one is available, will protect the eyes and lungs, which are especially vulnerable. As has already been pointed out, clothing which has been contaminated with liquid "blistering gas" must be discarded at once. If this is not done, the wearer will carry his own atmosphere of gas about with him, and the liquid will quickly penetrate to the skin and attack it; he will be a source of danger not only to himself but to others.

Casualties from phosgene poisoning are probably the most serious cases which will have to be treated. In an area where phosgene has been released there may be a large number of persons who have just smelt the gas and think they are dangerously ill. A great deal of discretion may consequently be necessary in dealing with the situation. A patient who is suspected of having been exposed to one of these gases should be carefully questioned with a view to finding out whether the quantity of gas inhaled has been such as to cause serious injury. If it is possible to smell phosgene or chlorine on a person's clothing it

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[previous page](#)

[next page](#)