

## THE ST. JOHN AMBULANCE (A.R.P.) COURSES.

### TYPICAL WAR GASES.

| Group          | Code Name.          | Name.    | Chemical and Physical Properties.   | Smell.                        | Persistence     | How used  | Physiological Effects  | Concentration which will incapacitate in 2 minutes' exposure                                       |
|----------------|---------------------|----------|---|-------------------------------|-----------------|---|--|--|
| CHOKING GASES. | Phosgene            | C.G.     | Colourless gas, except in presence of moisture, when it forms a thin white cloud. Fairly stable in absence of moisture; in presence of moisture it readily hydrolyses and attacks metals, especially iron, steel and brass. Boils at 46 deg. F. | Musty hay                     | Non-persistent  | In cylinders mixed with chlorine. In T.M. bombs, air bombs and shells | Very deadly lung irritant. Action not so quickly apparent as with chlorine, but is progressive. Lachrymator. | 1 in 70,000 by lachrymation.<br>1—1,000 for 2 mins. fatal—lung<br>1—50,000 for 10 mins. fatal—lung |
|                | Chlorine            | Red Star | A greenish yellow gas with a pungent odour, readily liquified by pressure and cooling. Very reactive with all metals. Very soluble in water. Boils at 29 deg. F.  | Chloride of lime              | Non-persistent  | In cylinders mixed with phosgene                                      | Lung irritant; deadly, but less so than phosgene. Action is immediate and progressive                        | 1 in 2,000 for 2 mins. fatal—lung<br>1—10,000 for 10 mins. fatal—lung                              |
|                | Chloro-picrin       | P.S.     | A pale yellow liquid almost insoluble in water. Under ordinary conditions is fairly stable. Tarnishes metals to a slight degree. Boils at 234 deg. F.   | Pungent; causes lachrymation. | Semi-persistent | In shells or bombs. Has been used in projector drums                  | Deadly lung irritant. Causes vomiting and lachrymation. Effect rapid and progressive                         | 1 in 100,000 by lachrymation   |
|                | Chloro-acetophenone | C.A.P.   | White, crystalline solid. Only slightly soluble in water. Exceedingly stable and is not af-   | Sweet, then irritating        | Non-persistent  | Released from generators  | Lachrymator. Skin irritant   | 1-5,000,000  |

|                |  |               |  |  |                |  |   |  |
|----------------|--|---------------|--|--|----------------|--|---|--|
| TEAR GAS.      |  |               | no action on metals.<br>Melts at 131 deg. F.   |  |                |  |   |  |
|                | Ethyl-iodoacetate  | K.S.K.        | Heavy, oily, brown liquid. Slowly decomposed by water. Boils at 358 deg. F.  | Fruity   | Persistent     | In shells, grenades, and bombs                           | Lachrymator   | 1-5,000,000  |
| NOSE GAS.      | Chloro-dihydrophenarsazine (Diphenylamine chloro-arsine)               | D.M.          | Bright yellow, crystalline solid. Insoluble in water. On heating the solid melts and vapour condenses to a particulate cloud. Melts at 383 deg. F.   | Irritating   | Non-persistent | Released from generators                                 | Sensory irritant, causing coughing, sneezing, vomiting, pain in the nose, throat, chest, gums. Action almost immediate, but with some nose gases there may be a delay in the appearance of symptoms | 1-8,000,000  |
| BLISTER GASES. | Dichlorodithylethyl sulphide (mustard gas), "Yperite" or Yellow Cross. | H.S.          | Dark, heavy, oily liquid as used for charging. Slowly hydrolyses with water. Destroyed by chloride of lime (bleaching powder). Freezes at about 40 deg. F. The pure material freezes at 57 deg. F. | Garlic, onions, mustard                                    | Persistent     | In shells, air bombs, air spray, and in demolition bombs | Vesicant; eye, skin, and respiratory irritant. Deadly. Effect delayed 2-24 hours and progressive  | The effects of this gas are delayed for several hours; therefore no immediately incapacitating concentrations can be stated, but 1-1,000,000 breathed for 1 hour would probably cause 100 per cent. casualties |
|                | Chlorovinylchloroarsine (Lewisite)                                     | M.I. (U.S.A.) | Heavy oily liquid readily decomposed by water  | No smell when pure; crude lewisite has geranium-like odour | Persistent     | In shells, air bombs, air spray and in demolition bombs  | Vesicant (more rapid than H.S.), eye, skin and respiratory irritant. In crude state lachrymatory effect is also observed  |  |

Note 1.—Protection against the above gases is afforded to the eyes, nose and lungs by wearing a properly fitted respirator of an officially approved type.

Note 2.—To obtain protection against the skin effects of blistering gases, it is necessary to wear special protective clothing.

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