the supreme folly:

chemical & biological weapons

Frank Barnaby
Oganes Baroyan
Evan Luard
Sean MacBride
Richard MacCarthy
Matthew Meselson
Jan Prawitz

with a preface by U Thant

8s

the supreme folly:

chemical & biological weapons

An international conference on chemical and biological warfare was held in London from 21 to 23 November 1969. This pamphlet contains an edited version of some of the papers presented at that conference.

7163 5000 9

3. CB weapons : the facts

MATTHEW MESELSON

In the months just ahead governments will be called upon to make decisions about chemical and biological weapons that will have major consequences far into the future. The United Kingdom will play, and is already playing, a key role. The following discussion will be largely military in nature. It is addressed principally to the problems faced by nuclear powers and nuclear alliances. Britain is included on both counts. The nuclear nations are the only ones known to possess substantial chemical and biological (CB) forces and their CB weapons policies will probably determine the role of CB weapons on the world scene. The main questions I wish to consider are: What are CB weapons? What protective measures can be taken against their effects; and what are the military arguments for and against the use of these weapons and for and against possessing them.

Although CB weapons are linked together in the custom, the psychology, and the international law that restricts their use, military planners often distinguish several categories in order to analyse military requirements. Although the distinctions are not altogether clear cut from a purely scientific standpoint, they are useful for military analysis. I shall discuss four kinds: lethal germs, incapacitating germs, lethal chemicals, and incapacitating chemicals, although the importance of the problems posed by anti-plant chemical and biological weapons (CBW) is almost universally under estimated.

Lethal Germ Weapons

Lethal germ weapons operate by disseminating clouds of lethal disease germs over or up-wind from the target area. The germs would then be inhaled by the target population. The disease anthrax is an example. Anthrax germs are tiny objects a thousandth of a millimeter in diameter. They can be prepared rather easily. Inhalation of several tens of thousands of them, not a very large quantity where germs are concerned, is enough to initiate the disease called pulmonary anthrax. It is thought to be almost invariably lethal. The symptoms would appear a few days after breathing in the germs. Death would occur a few days later. This lag between the time of a biological warfare attack and the outbreak of disease, the incubation period, is a common feature of germ weapons.

Germs may be disseminated by aircraft bombs or spray tanks, by missiles, by spray tanks mounted on ships or submarines offshore, and by land based saboteurs. Very small quantities of germs would be sufficient to cover large areas. It is thought that a light bomber dispensing anthrax under suitable meteorological conditions could deliver enough to cause a high proportion of fatalities over hundreds of square miles.

Since an attacker's choice of germs is wide and he could employ mixtures, specific medical measures such as mass immunisation and antibiotics are not likely to provide an adequate defence. Protection can be afforded by gas masks or air filtered shelters if early warning of attack is given, but satisfactory early warning devices have not yet been developed. It is clear that the military role of lethal germs would be to kill populations over large areas. For the nuclear powers this capability is already provided by their strategic nuclear forces. Lethal germs would be vastly inferior to nuclear weapons as strategic deterrents, but the important point is that nuclear powers have no need for lethal germ weapons, for in so far as strategic deterrence is effective, it is already provided by nuclear weapons. Rather, the overriding interest of nuclear nations and alliances is to keep other nations from acquiring germ weapons. Beyond that, all nations have a common interest in preventing any development of germ weapons, for the proliferation of these weapons would greatly increase the number of nations able to kill entire populations.

Incapacitating Germ Weapons

Some diseases which are not often lethal may be considered as possible incapacitating weapons. An example is Venezuelan equine encephalitis. It causes severe

headaches and prostration, but has a natural case fatality rate of less than one per cent. The methods of disseminating incapacitating germs and the problems of defending against them are essentially the same as those I have described for lethal germs. The possession of incapacitating weapons, whether germs or chemicals, is not to be justified as providing deterrence. In a world oversupplied with lethal weapons, non-lethal ones do not provide significant deterrence. They are not second strike weapons. Their possession is justified only if their use is contemplated for a first strike. Incapacitating germ weapons could be used to weaken an enemy before invasion or to impede his advance. The situation in which they would be the weapons of choice, if any, would be extremely rare and the stakes for the user would be tactical, not strategic. The principal cost of using incapacitating germs would be the stimulation of the proliferation of germ weapons, including lethal ones. The facilities for developing, producing and delivering incapacitating germs are essentially the same as those required for lethal germs. International law and international custom do not distinguish between them. Even the possession of incapacitating germ weapons will act over time to stimulate the proliferation of lethal germ weapons and weaken the restraints against their use.

Germ weapons possess many shortcomings, however, even from a military viewpoint. Their effects are not as predictable as those of other weapons. They might get out of control, spreading disease beyond the intended target or setting up lasting new foci of disease. They are not attractive weapons. I do not think there is currently any serious interest in them in high military circles anywhere. Although they could become a terrible menace, they do not represent the same immediate problem as chemical weapons.

Lethal Chemicals

Modern lethal chemical weapons are the nerve gases first developed, but not used, by Germany in the second world war. They are hundreds of times more poisonous than the poison gases of the first world war and kill when inhaled or when deposited as liquid droplets on the skin. For tactical use they can be supplied in mines, artillery projectiles, rockets, bombs, and spray devices. A medium bomber delivering nerve gas bombs under meteorological conditions favourable to the attacker could kill a high proportion of persons throughout the central region of a large city. A gas mask provides excellent protection against all chemical weapons except those that attack the skin, for which a special suit or shelter affords good protection. Devices able to give early warning of the presence of nerve gas have been developed, nevertheless civil defence would be a massive undertaking, requiring elaborate preparation and rigid discipline.

In a chemical war, soldiers in the field would have to wear protective equipment much or all of the time. This is cumbersome and tiring and fighting efficiency is severely reduced. For tactical use against an enemy equipped with protective gear and able to impose the wearing of such gear on one's own troops by the threat of retaliation in kind, lethal chemical weapons would greatly complicate the battlefield without giving either side a major advantage. This argues for not initiating lethal chemical warfare. It also argues for possessing lethal chemical weapons as a deterrent if the other side is thought to have them.

The argument for having lethal chemicals as a deterrent is rather complicated; it is not a simple assertion that one side must have whatever the other side has, or might have. That approach to military planning "keeping up with the Joneses" is deceptively attractive, but is not adequate. The rationale that I have just outlined for having lethal chemical weapons as a deterrent is subject to serious challenge. Any use of lethal chemical weapons would seriously risk provoking their extensive proliferation to nations that do not now possess them. Moreover, chemicals and germs are often considered together, so that proliferation of the former encourages proliferation of the latter.

An important constraint on the tactical use of lethal chemicals, especially on friendly soil, is that their large scale employment would inevitably cause heavy fatalities among undefended civilians in the combat zone and out to considerable distances down wind. Under not uncommon meteorological conditions the tactical expenditure of moderate quantities of nerve gas could cause fatalities as far as 100 Km downwind. A few days of tactical nerve gas war in Europe could kill tens of millions of civilians.

Incapacitating Chemical Weapons

There are two types of incapacitating chemical weapons, long lasting and short lasting. An example of the long lasting type is the US agent called BZ. It can incapacitate for several days. However, it causes unpredictable and often violent behaviour and can have dangerous side effects. Although much effort has been put into developing a long lasting incapacitant without these undesirable properties, no more satisfactory long lasting incapacitant than BZ has yet been developed. The principal chemical incapacitant now in military use is CS, a short lasting incapacitant. It was discovered in the United States in the 'twenties and developed as a riot control agent in Britain in the 'fifties. It has been repeatedly used for this purpose, most recently and notably in Ulster. It is used very extensively as a military weapon in Vietnam. Exposure to CS causes intense pain in the eyes and upper respiratory tract, progressing to the deep recesses of the lungs, causing a feeling of suffocation and acute anxiety. If exposure it not excessive, these symptoms usually pass within minutes after restoration to fresh air. Heavy dosages as may occur in confined spaces or when massive quantities of CS are dispersed, can cause lung damage. Very intense exposure to unprotected skin can cause second degree chemical burns.

A gas mask and even certain simpler devices can protect the eyes and respiratory tract against CS. Clothing provides considerable protection of the skin.

When used for military purposes, agents like CS are called harassing agents. They can be used to reduce an enemy's fighting efficiency by forcing him to mask, to force an enemy from cover to face capture or hostile fire, to deny him terrain, or to upset his fire. Harassing chemicals were the first chemical warfare agents employed during the first world war.

Over 13,000 tons were used, more than the amount of mustard gas used in that war. During the second world war Germany and the United States prepared large stocks of munitions filled with tear gas and other harassing chemicals, but refrained from using them. The first major use of harassing gas in combat since the 1914-18 war occurred in Vietnam, where over 14 million pounds have been used by the United States forces so far. Some was used to facilitate the attack or capture of enemy soldiers mingled with civilians when the alternative would otherwise have been to risk killing civilians with conventional fire or not to attack the enemy. However, these situations are not common, civilians usually flee from the area of firefights. Moreover, civilians who have taken shelter when fighting starts would often be driven into the open if gas is used, knowing less well how to conduct themselves under fire than soldiers do, they would often be preferentially killed if harassing gas is used. Nevertheless, this is the main military argument in favour of such a gas.

Most of the CS used in Vietnam has been employed to facilitate ordinary military operations, for which a wide variety of CS munitions are employed. They range from grenades and small rockets to 155 mm artillery projectiles, large mortar cartridges and aircraft spray devices and bomb dispensers containing up to 1,000 lbs. of CS. They can, of course, enhance the effectiveness of ordinary military operations. However, once the enemy learns to expect gas to be used against him, he will resort to the use of masks and other protective measures.

This has happened in Vietnam and has greatly reduced the military utility of

harassing agents. A hazard in the employment of incapacitating chemicals in war, particularly when done on a large scale, is that it stimulates other nations to initiate or expand their own programmes for chemical (and perhaps germ) weapons. Even if the first result is the deployment of harassing agents on both sides of a future conflict, the introduction of weapons, defences, and logistic arrangements all suited to chemical warfare would facilitate the progression to more powerful and deadly agents with their destabilising features and special threats for civilians. Once the long observed rule of "no gas" is abandoned there is no unique and equally simple standard for agreement on where to hold the line. When harassing gas is used in order to enhance the lethal effectiveness of conventional weapons, as during the first world war and in Vietnam, the distinction between lethal and incapacitating chemicals loses its essential meaning. A meaningless distinction is not likely to last for very long.

The prevention of chemical and biological warfare is to a large extent a psychological problem. If we can maintain and reinforce the traditional expectation that no gas or germs will be used in war, there will not be much pressure for these weapons to proliferate. Even in nations that possess them, military planners will not expect to rely on them and they will probably not be integrated into standard war plans. This psychological aspect of the problem has been understood since the first world war by almost every nation, including the United States, but recently a dangerous break with tradition has been allowed to occur and escalate in Vietnam. I consider the use of gas there, even though it is not lethal gas, to be the major and most immediate threat to the barriers that prevent CB warfare. In my opinion, the best way for us to remove the threat of chemical and biological warfare is to pay close attention to the three recommendations of United Nations Secretary General U Thant in his preface to the recent UN report on CB weapons and the effects of their possible use (see Appendix 1, p40).

U Thant's Three Points

1. To renew the appeal to all states to accede to the Geneva protocol of 1925.

2. To make a clear affirmation that the prohibition contained in the Geneva protocol applies to the use in war of all chemical, bacteriological and biological agents (including tear gas and other harassing agents) which now exist or which may be developed in the future.

3. To call upon all countries to reach agreement to halt the development, production and stockpiling of all chemical and bacteriological (biological) agents for purposes of war and to achieve their effective elimination from the arsenal of weapons.