

**WEAPONS OF MASS DESTRUCTION : //  
A STUDY IN RESTRAINTS ON CHEMICAL WEAPON SYSTEM**

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**CHAPTER ONE**

**WEAPONS OF MASS DESTRUCTION:**

**A GENERAL VIEW**

The phrase 'Weapons of Mass Destruction' gives the impression of a system of weapons, the use of which (both direct and indirect) results in the annihilation of a majority of living beings. But if we adhere to such a view, it would mean the inclusion of almost all the weapons within the fold of W.M.D. Of course, it is a widely conceded fact that most of the weapons of today including the so-called conventional weapons have the Mass-Destruction capability. This agreement is based on the resultant-effects of the weapon-systems. But the moment we move on to the question of controlling these weapons, differences emerge with some willing to make the definition as narrow as possible and others demanding the inclusion of a couple of more weapons. This type of pull-and-push of the countries resulted in a definition of the weapons of Mass Destruction (hereafter referred to as WMD), which restricted it to mean only a few weapons, eliminating a lot which too had Mass Destruction capability. But the United Nations, which legitimised this definition, should not be blamed for this act of omission, because it is the members constituting the organisation especially the great powers that exercise a controlling influence over it. The status of the great powers is based on their military strength, which has enabled them to maintain this dominant position in the world body. They would naturally not favour a broader definition of weapons of mass destruction because they have a virtual

monopoly over them. This monopoly is the foundation of their great power status.

The atomic bombing of Hiroshima and Nagasaki caused fear and dismay among all those who were genuinely concerned for world peace and stability. It was this fear and anxiety that found expression in the U.N. General Assembly Resolution of 24 January, 1946, which established a commission to deal with the problems raised by the discovery of atomic energy. The Commission was charged with the responsibility to make specific proposals "for the elimination from national armaments of atomic weapons and of all other major weapons adaptable to Mass Destruction".<sup>1</sup> And, on 14 December 1946, another resolution was passed, which set up principles governing the general regulation and reduction of armaments, and asked for the elimination of atomic weapons and all other major weapons adaptable "now" or "in the future" to Mass Destruction.<sup>2</sup>

"In 1947, when the U.N. Commission<sup>3</sup> for Conventional Armaments was discussing the programmes of its work, the need arose to define the categories of armaments falling within its terms of reference".<sup>4</sup> The method adopted was to define

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1. The problem of chemical and biological warfare: A study of the Historical, Technical, Military, Legal and Political aspects of CBW and possible disarmament measures, SIPRI, vol.IV, CB Disarmament Negotiations, 1920-70, p.193.
  2. Ibid.
  3. The Committee consisted of States Members of the Security Council: France, Australia, Belgium, Brasil, China, Colombia, Poland, Syria, the USSR, UK and USA.
  4. CB Disarmament Negotiations, SIPRI, vol.IV, op.cit., p.193.

the WMD first, thereby facilitating a definition of conventional weapons. But it was the politics played by the United States, which was the sole possessor at that time of the important WMD that marred the negotiations from evolving a universal definition.

Thus, on 5 September 1947, the U.S. submitted a draft resolution, which defined WMD as weapons which included "atomic explosives, radioactive material, lethal chemical and biological weapons and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above".<sup>5</sup> In response to the opposition of the Soviet Union, the United States tabled a revised draft resolution on 8 September 1947, which defined WMD as including "atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above".<sup>6</sup> But the Soviet Union considered it to be too narrow a definition. The Soviet contention was that even there were some weapons used during the Second World War by Germany, like the flying bombs and

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5. The problem of Chemical and Biological Warfare, SIPRI, Vol.IV, op.cit., p.193.

6. Ibid.

rockets, which had mass destruction effect on population and cities. But the acceptance of the U.S. resolution would mean the exclusion of these weapons from the category of WMD. "This statement reflected the Soviet position of that time, that general regulation and reduction of armaments should cover all kinds of armaments".<sup>7</sup>

There was disagreement about chemical and biological weapons as well, because the United States insisted on the need to distinguish between lethal weapons and those that were not lethal, such as teargas and smoke bombs.<sup>8</sup>

Great Britain argued that WMD should only include, atomic, biological and chemical weapons (the ABC weapons). The Australian delegate, however, wanted the inclusion of radioactive material under the category of WMD. The Ukrainian delegate defined WMD as weapons directed primarily against peaceful populations and weapons not of defence but of aggression. After a prolonged debate, the U.N. Commission for Conventional Armaments adopted a definition on 12 August 1948, by seven votes to two with two abstentions,<sup>9</sup> on the

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7. Ibid.

8. Mihaylovic Miodrag, "New Weapons of Mass Destruction", Review of International Affairs, 28(649), April 20, 1977, p.29.

9. China and Brasil abstained not on the ground of the substance of the resolution, but had some reservations as to the procedure. Those who voted against were the USSR and Poland.

basis of a revised draft resolution submitted by the United States on 8 September 1947 (the definition is given above).

There was no further discussion on the subject and the term MMD was, later on, used in the outerspace treaty<sup>10</sup> and the seabed treaty<sup>11</sup> but without any clarification as to its meaning. An attempt is made in the present chapter to give a general view of the weapons of mass destruction - broadly under three categories, (1) Nuclear (Atomic and Radiological), (2) Biological, and (3) Chemical weapons.

## I. NUCLEAR WEAPONS

Nuclear weapons are weapons of Mass Destruction and "a perpetual menace to human society". <sup>It has been correctly stated</sup> ~~that~~ "never before have States been in a position to destroy the very basis of the continued existence of other States or regions; never before has the destructive capacity of weapons been so immediate, complete and universal; never before has mankind been faced, as today, with the real danger of self-extinction!"<sup>12</sup>

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10. "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outerspace, including the Moon and other Celestial Bodies".
  11. "Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the sub-Soil thereof".
  12. "The Perpetual Menace to Human Society", U.N. Study on Nuclear Weapons in Strategic Digest, Nov-Dec 1980, p.864.

In spite of this fact, nuclear arsenals have continued to grow both in numbers and in their destructive capability. The existing number of nuclear weapons in the world today may be anywhere around 40,000 to 50,000 according to this U.N. report. It says the combined explosive power of these weapons would be equivalent to that of more than one million Hiroshima bombs, or to put it differently, some 13 billion tons of TNT, which represent more than three tons for every man, woman and child on earth. Most distressing is <sup>the fact</sup> that the world today is spending every year the staggering amount of over \$500 billion - that is to say, about \$1 million every minute on the arms race. Besides, the report points out that the capability to acquire a nuclear weapon force is probably within the reach of 20 to 25 non-nuclear-weapon States.<sup>13</sup>

Conceived and articulated primarily by then Secretary of State John Foster Dulles, the first explicit American doctrine on the use of nuclear weapons was the doctrine of massive retaliation - under which the United States threatened the use of nuclear weapons in an unspecified list of military and political actions. But "as Soviet capabilities grew, and as the imprudence of massive retaliation became manifest, nuclear arms policy was divested of such sweeping political

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13. "U.N. estimates 50,000 nuclear weapons in the world", The Times of India (Delhi), 5 January 1981.



roles and began to focus exclusively on the prevention of a large-scale nuclear holocaust".<sup>14</sup>

Realising fully well the suicidal nature of a nuclear war, the United States evolved a strategy of deterrence under the doctrine of Mutual Assured Destruction (MAD), "which postulated that so long as either side was capable of inflicting unacceptable damage on the other, after having itself suffered a massive attack, neither side would have any incentive to initiate a nuclear exchange".<sup>15</sup>

But doubts were cast on the MAD concept because its viability depended on the point that both the parties should accede to such a doctrine and in the event of one party gaining supremacy over the other, the likelihood of non-adherence to such a concept is quite obvious. Besides, the required level and composition of forces ~~to attain~~ to attain the MAD level was difficult to determine.

It was in 1974 that the American Secretary of Defence Schlesinger took the flexible options debate a stage further. "He suggested that the Soviets had a doctrine of flexible nuclear options which included attacks on U.S. military

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14. John W. Jensen, "Nuclear Strategy: Differences in Soviet and American Thinking", Strategic Digest, February, 1981, p.172.

15. Ibid.

targets. If the U.S. had the ability to operate similar, limited strategic nuclear strikes against Soviet military targets, deterrence would be greatly enhanced. If the deterrent posture should fail, he argued that the U.S. should have a coherent nuclear strategy for the conduct of nuclear war".<sup>16</sup>

The most clear and outright of all the declarations was the Presidential Directive 59 (PD 59) issued by President Carter, in August 1980. This stated that: "In our analysis and planning, we are necessarily giving greater attention to how a nuclear war would actually be fought by both sides, if deterrence fails".<sup>17</sup>

But just a mentioning of the politics of the Nuclear powers, does not make any sense, unless we take a stock of the impact of this Nuclear Age, both on the environment as well as on the security of the International System as a whole.

#### Nuclear Age and Environment

By a nuclear weapon we mean either an atomic or a hydrogen bomb. Technically speaking, the former is based on the principle of fission (splitting of the nucleus of

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16. Stewart Menaul, "Changing Concepts of Nuclear War", Security Special, Conflict Studies, The Institute for the Study of Conflict, No.125, December, 1980, pp.3-6.

17. Ibid., p.5.

a bigger atom) and the latter<sup>is</sup> on that of fusion (joining of two smaller nuclei into an atom). In this process, energy is released in the form of (1) shock or blast waves, (2) thermal radiation, and (3) nuclear radiation - which in combination cause all the destruction. The following is an analysis of these three forms of energy:

(a) The immediate result of a nuclear detonation is the dissipation of about half of its tremendous energy in the form of a blast or shock wave. (i) The shock wave of a surface or subsurface burst will blast out an immense crater, for example, "a 0.91 Mt bomb detonated at or near ground level will produce in dry soil a crater having a surface area of about 12 ha, and a maximum depth of about 90 m (a volume of almost  $4 \times 10^6 \text{ m}^3$  in size); (ii) It is also estimated that roughly 0.5 percent of the material blown out of the crater is injected into the stratosphere for a residence time of perhaps one to three years".<sup>18</sup> Such aerosol supplies condensation nuclei for cloud formation. It also acts as a partial barrier to radiation to and from the earth, both in its own right and as a result of the clouds formed;<sup>19</sup> (iii) One cannot also rule out the possibility of a natural evulsion like an earthquake or related

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18. Ibid., p.7

19. Ibid., p.18.

seismic event in a tectonically unstable location, triggered off by an underground detonation.

(b) About one-third of the bomb's energy is dissipated as an immense pulse of thermal energy resulting in, (i) large wild fires or firestorms; (ii) another effect of this exceedingly high temperatures is to transform a certain fraction of the air into such oxides of Nitrogen as Nitric Oxide (NO) and Nitrogen Dioxide (NO<sub>2</sub>).<sup>20</sup> Much of this material finds its way into the lower stratosphere, where it reacts catalytically with the ozone (O<sub>3</sub>), degrading it to oxygen gas (O<sub>2</sub>). Such a depletion of the ozone layer permits, among other things, a greater fraction of the solar ultraviolet radiation to reach the earth. "Ultraviolet radiation (especially at wavelength, shorter than about 300 nm) has the ability to damage various macro-molecules such as DNA and proteins, and thereby the cells and thus the organism of which they are a part".<sup>21</sup> It is mostly responsible for the increase in skin cancers.

(c) Nuclear radiation represents only about 15 percent of the total energy release of a nuclear fission bomb. The area of mortality to living things from nuclear radiation is an extensive one. Thus the nuclear radiation from a

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20. Ibid., p.9.

21. Ibid., p.19.

0.91 Mt Surface burst will kill most trees over an area of  $13 \times 10^3$  ha. and most vertebrates on  $36 \times 10^3$  ha.<sup>22</sup>

The nuclear arsenals of the present age are filled with thousands of nuclear devices of over 50 Mt. capacity of energy yield. It may be reminded here that the bomb that destroyed Hiroshima had an energy yield of about 13 Kt and the one that destroyed Nagasaki a yield of about 21 Kt. "In the case of Hiroshima, between 310,000 and 320,000 people were exposed to the various effects of the atomic explosion. Of these, between 130,000 and 150,000 had died by December 1945, and an estimated 200,000 by 1950, if latent effects are included. In Nagasaki, the corresponding numbers are 270,000-280,000, 60,000-80,000 and 100,000".<sup>23</sup> Even if a bomb of the Hiroshima type is exploded now, the fatality figures will certainly be more than this, considering the increase in population. Besides, the interdependent nature of the present day world, will not only enhance the environmental pollution arising out of nuclear explosions, but it might aggravate the world-wide economic and social disruption. For example, "the United States and Canada have about 40 million tons of the "heat stocks and if they were unavailable after a nuclear war

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22. Ibid., p.15.

23. U.N. Study on Nuclear Weapons, op.cit., p.785.

the world food situation would become disastrous in a very short time".<sup>24</sup>

### Nuclear Age and International Security

Of the many problems that the nuclear weapons have posed for the security of the world system, the problem of accidental war is of recent origin. "Accidental War" is defined as "the exchange of WMD not initiated with the purposeful calculation of the governmental decision-makers in authority".<sup>25</sup> The most plausible triggers are serious accidents involving WMD and faulty communications, particularly false warnings of attack. It is correctly stated that "the greater the level of tension and the greater the degree to which military forces are operated on a 'hair-trigger' basis", "the more likely it is that emphasis will be placed on quick response rather than on redundant verification and authorization".<sup>26</sup>

It is on record that in five instances U.S. Nuclear capable missiles accidentally overflow or crashed into or near the territory of another state.<sup>27</sup> Khrushchev once referred to the destruction of an erratic Soviet missile

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24. Ibid., p.807

25. Lloyd J. Dumas, "National Insecurity in the Nuclear Age", Bulletin of the Atomic Scientists, May 1976, p.27.

26. Ibid., p.27.

27. Ibid., p.28.

that was heading towards Alaska.

Another most plausible trigger is the faulty communication arising out of the technological snags in the warning system. In order to provide the earliest possible warning of enemy attack, the electronic means of detection have been in use. Even then, due to the high speeds of the mass weapon delivery systems, the maximum achievable warning time is now a matter of 15 to 35 minutes. The reply to such a warning can take two forms: either verification of the warning system or immediate response to the warning that is triggering off a war. One has to take either of the two options - verify or respond (as doing one will preclude the other) - which makes the problem more serious.

Very recently because of an electronic malfunction, three times U.S. strategic nuclear forces were placed on higher alert. "On November 9, 1979, the NORAD Computer indicated an attack by submarine-launched ballistic missiles. On June 3, it indicated a wholesale attack, including submarine-launched weapons. Three days later, it signalled that missiles had been fired from submarines lurking 1,000 miles off the U.S. coast and could reach their targets in 10 minutes or less".<sup>28</sup> The November scare lasted

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28. Robert C. Aldridge, "A Scary Nuclear Loophole", Courtesy Int. H. Tribune, 26-27 July, 1980, Strategic Digest, Sept. 1980, p.650.

6 minutes and the June alarms lasted 3 minutes - a considerable portion of the allotted decision time. It is terrifying to think of the consequences had the alerts lasted only a few crucial minutes longer.<sup>29</sup>

There can be another possibility of a situation in which one country may deliberately create disturbances in the warning system of another thereby putting in doubt the credibility of that system. And, in time of actual occurrence may succeed in deterring the enemy from taking any retaliatory measures in right time (possibility arising out of the faulty experience of the past). This may sound a scientific fiction, but in this sophisticated technological age, it is not a difficult thing to achieve.

If this is the situation in U.S. - the most technologically advanced country, what can be the situation when other less advanced countries also possess the WMD. Besides, these types of technological snags have occurred only during the peacetime or less tense periods, but imagine a situation in which the international situation is very tense and the forces are kept on their toes and the missiles are stationed to go off just when the button is pressed.

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29. *Ibid.*, p.650.



Restraints on the Nuclear Weapons

Efforts have been made for a comprehensive destruction and elimination of nuclear weapons. In fact, the very first resolution adopted by the General Assembly in 1946 called for the complete prohibition of these weapons. But because of the lack of mutual confidence between the two major power blocs, disarmament talks could not achieve fruition. Nuclear arms race continued to escalate. The deadlock in the disarmament negotiations led to an emphasis on specific objectives. Arms control approach replaced the Disarmament approach to gain some practical benefits. This resulted in the conclusion of many agreements such as the Nuclear-test-ban Treaty, the Outer Space Treaty, and the Non-Proliferation Treaty. But a perusal of these treaties would show the loopholes that have been deliberately included in the text to serve the interests of the great powers.

(a) Signed in 1959 by 12 countries, "The Antarctic Treaty was the first International agreement which, as a Treaty establishing a demilitarised zone, implied provisions that nuclear arms would not be introduced into that zone".<sup>30</sup>

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30. U.N. Study on Nuclear Weapons, op.cit., p.852.

This is a welcome development. But an inhabited area requires more urgent attention than an uninhabited area like Antarctica. Besides, the Treaty is currently in force for only 19 States.

(b) The Outer Space Treaty of 1967 ("Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies") was a preventive one in as much as it seeks to avoid the spread of nuclear weapons to areas where they do not previously exist. But as the Treaty does not define Outer Space, there is no restriction on the passage through Outer Space of ballistic missiles equipped with nuclear warheads from one point on the globe to another. The development of the so-called killer-satellite systems is also outside this limitation.

(c) The Treaty "on the Prohibition of the Emplacement of nuclear weapons and other WMD on the Sea-Bed and the Ocean Floor and in the Subsoil thereof" entered into force on 18 May 1972. But "the Treaty does not impose any restrictions on the nuclear military use of the waters superjacent to the sea-bed; submarines equipped with nuclear weapons are treated like any other vessel and are not restricted in any way".<sup>31</sup> Besides, within 12 nautical

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31. Ibid., p. 854.

miles from its coast these undertakings do not apply to the Coastal State.

(d) "Nuclear-weapon testing has played a critical role in the continued development and refinement of nuclear weapons and their delivery systems. This is evidenced by the fact that since 1945 there have been more than 1,200 known nuclear explosions, about 90 percent of them by the Superpowers".<sup>32</sup> But, it was only in 1963 that a partial test-ban Treaty was reached between the United States, the United Kingdom and the Soviet Union. But this effort has not been able to check the nuclear testing as the nuclear-weapon States continue their testing underground. Besides, the non-participation of the two big States, France and China is a mockery of the whole effort.

(e) The most important of all is the non-proliferation treaty of 1970. The two review conferences have already disclosed both the theoretical and practical aspects of this discriminatory treaty, which, by excluding the so-called superpowers from the purview of the IAEA safeguards, has helped a vertical proliferation of the nuclear weapons.

(f) Efforts have also been made to create nuclear-weapon-freezones in different regions, like South Asia, Africa, Middle East, on the line of the Treaty for the Prohibition of Nuclear Weapons in Latin America or the

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32. Ibid., p.854.

Treaty of Tlatelolco. But practically no significant result has come out of it.

(g) The latest addition to the list is the Strategic Arms Limitation Talks/Treaties (SALT). The SALT-I agreement, which was signed in 1972, virtually put a moratorium on the weapons which were either unusable or obsolete. The SALT-II is yet to come into force, as the United States does not ratify it.

Thus, the nuclear weapons continue to pose the dangers to the whole world. Peace requires the prevention of the danger of a nuclear war.

## II. BIOLOGICAL AND CHEMICAL WEAPONS

"Second among the specters that haunt modern man is that of biological and chemical warfare".<sup>33</sup> But the importance of these weapons has been overshadowed by that of nuclear weapons, "which have a destructive power several orders of magnitude greater than that of chemical and biological weapons".<sup>34</sup> However, these are also WMD and can even be more dangerous than nuclear weapons because of the

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33. Bentley Glass, Bulletin of the Atomic Scientists (ed.) 1960, Biological and Chemical Warfare: An International Symposium, Guest Editorial, p.226.

34. Chemical and Bacteriological (Biological) Weapons and the Effects of their possible Use, Report of the Secretary-General of the U.N., Foreword, p.viii.

following reasons:

- i) The CB weapons require significantly less financial and scientific resources than the nuclear weapons and thus can easily be acquired by a good number of countries both small and big, thereby making the problem of control and inspection much more difficult;
- ii) As in the case of the nuclear weapons, the argument that the manufacture, testing and stockpiling of chemical or biological weapons would provide deterrence has been opposed particularly on the same ground of accidents some of which are on record; and
- iii) The third point which makes CBW a matter of special concern is the potential long range effects on man and nature of a massive chemical or micro-biological intrusion resulting in considerable ecological debilitation. "In fact the vagaries of wind and water currents and of bird and other animal migrations lead to the possibility that their effect would be felt by some neutral third party, or even by the organising power".<sup>35</sup>

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35. "Weapons of Mass Destruction and the Environment", SIPRI, p.45.

The closeness of the CB military systems, both from the arms race and arms control point of view, requires an integrated approach to the problem under review.

The vigorous research of the medical micro-biologists of various countries has helped in the total or partial elimination of many infectious diseases which formerly took thousands of human lives. This constructive micro-biology - the microbiology of peace and progress - is illuminated by the ideals of fighters for the life and health of mankind. "Unfortunately, there is another microbiology, which brings death and destruction - Biological Warfare",<sup>36</sup> in which various living organisms (e.g., rickettsiae, viruses and fungi), as well as bacteria are used as weapons. The Report of the Secretary-General of the U.N. defines Bacteriological (Biological) agents of warfare as "the living organisms, whatever their nature, or infective material derived from them, which are intended to cause disease or death in man, animals or plants, and which depend for their effects on their ability to multiply in the person, animal or plant attacked".<sup>37</sup>

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36. Modern Microbiology and the BW Menace, Bulletin of the Atomic Scientists (1960) - an International Symposium, op.cit.

37. U.N. Secretary-General's Report, op.cit., p.5.

There have been many allegations in the past about a biological attack by belligerents. But, "the facts of BW are not so well known and even when known they are less compelling".<sup>38</sup> The earliest attempt at true BW seems to have been the 18th century episode involving the spreading of smallpox among American Indians.

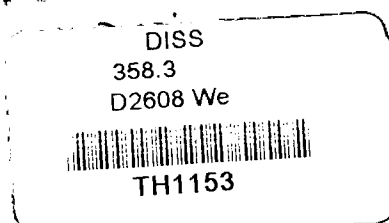
But, it was during the First World War that some significant allegations were made against the Germans. But, if one goes by the League of Nations' record (1924), it becomes clear that none of these efforts could have achieved a significant military result. The report says: "In contradistinction to the chemical arm, the bacteriological arm has not been employed in war".<sup>39</sup>

The revelation of the secrets surrounding the German efforts to acquire a potential BW capability provided an impetus towards increasing R & D in this field in many countries. The Second World War witnessed a tremendous interest in the field of R & D, there were, however, fewer allegations of actual use. The reports of the International Military Tribunal at Nuremberg observed that the activities

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38. Theodor Rosebury, "Some Historical Considerations", Bulletin of the Atomic Scientists, op.cit., 1960, p.227.

39. Rosebury, op.cit., p.228.



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of Germany did not go beyond preparation for bacteriological warfare. However, more explicit information is available regarding Japanese BW activities during the Second World War.

The Khabarovsk trial (USSR), in which 12 Japanese military prisoners were tried, revealed that extensive Japanese development of BW began in 1931, soon after the occupation of Manchuria and that in 1936 two large installations for the work were built in Manchuria. "Three principal methods of utilising bacteria for war purposes were said to have comprised spraying them from aircraft, dropping special bacterial bombs from aircraft, and contaminating water sources, pastures and inhabited areas of land by methods of sabotage".<sup>40</sup> The microbial agents most prominently mentioned were those of plague, cholera and anthrax and it is said that "hundreds of millions of fleas" were bred in special chambers for this purpose. Even this was not the end. The height of the brutality was that even the Chinese and Soviet prisoners were used as subjects in BW experiments with fatal results. The New York Times reported that even Great Britain conducted such tests in the Bahama Islands area and in 1957 a biologist, at Utah State Agriculture College, published a paper protesting against American field

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40. Ibid., p.229.



test of BW at Dugway, Utah.<sup>41</sup> Since then, there have been many allegations of the use of BW, the most prominent being allegations of American use of BW in Korean and Vietnam.

There may be more than one reason to justify the misuse of biological weapons on a large scale. But there is one curious respect in which BW seems pre-eminent with little dispute. It is widely thought of as the most odious or abhorrent form of warfare. And it is probably for this reason that the decision-makers of most countries to come to a common platform to ban the use of such weapons. This resulted in the Convention of 1972, "on the prohibition of the development, production and stockpiling of bacteriological (biological) and toxin weapons and on their destruction". This was a step in the right direction, but more efforts are still needed in this direction.

Some of the loopholes in the text of the convention<sup>42</sup> provide ample opportunity for a violation of the allegations: (1) Researches aimed at production of the agents and toxins that have prophylactic, protective or other peaceful use are not banned. But "the very maintenance of defensive preparations, which at certain stages are indistinguishable from offensive

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41. Ibid., p.230.

42. For the text of the Convention, see Appendix

preparations, may generate suspicion, and the continued production of warfare agents contains a risk of infringement or of allegations of infringement of the provisions of the convention".<sup>43</sup> Besides, there is no agreed standards or criteria for the quantities of agents and toxins that may be required especially for military defensive purposes.

(ii) The parties undertake to destroy or divert to peaceful purposes, within 9 months after the entry into force of the convention, all the prohibited agents, toxin weapons, equipment and means of delivery (Article II). But, no verification of the destruction of stockpiles, or of their diversion to peaceful purposes is envisaged.

(iii) Most important of all is the provision of Article XIII, which permits formal withdrawal from the convention.

The convention came into force on 26 March 1975. But even though the United States announced the destruction of all stocks of biological and toxin agents, except for laboratory defensive research purposes, there have been allegations against it. As one news report says: "The CIA appears to have launched a dirty bacteriological

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43. SIPRI Year Book of World Armaments and Disarmament, 1972, The BW Convention, p.50.

aggression against Cuba. The country suddenly finds itself in the grip of the Dengue fever epidemic. During the last 8 weeks, about 300,000 people have been plagued with this vicious haemorrhage infection".<sup>44</sup> Even the Soviet Union was alleged to be building new facilities for the manufacture and storage of BWs.<sup>45</sup>

However, the number of signatories to the convention is increasing and there have been 91 signatories to the BW convention as of 31 December 1980. Considering the fact that the whole system of enforcement is based on trust rather than on supervision, we can hope that if the parties to the Convention genuinely desire to put a full stop to their biological arms race, then it would not only banish the biological weapons from the world armoury, but would pave the way toward chemical disarmament, too.

### III. NEW WEAPONS OF MASS DESTRUCTION (NEMD)

Apart from the existing horrifying WMD - whether nuclear, chemical or biological, scientists and military experts are beginning to increasingly speak of 'new' WMD and 'new' systems of these weapons.<sup>46</sup> And it was the

44. R.K. Mishra, "CIA's Bacteriological Warfare against Cuba", Link, August 2, 1981.

45. SIPRI Year Book of World Armaments and Disarmament, 1976, p.399.

46. Mihaylovic Miodrag, "New Weapons of Mass Destruction", Review of International Affairs, 28(649), April 20, 1977, p.29.

Soviet Union, which took the initiative at the 30th Session of the U.N. General Assembly by submitting a 'draft agreement' on the prohibition of the development and manufacture of these new types of WMD and the new systems of such weapons. Responding to its opponents, it defined the new phenomena as follows:

The 'new kinds' of weapons "included the types of weapons which are based on qualitatively new principles of action and whose effectiveness may be comparable with or surpass that of traditional types of WMD".<sup>47</sup>

The 'new systems' of the WMD referred to "the existing or future systems which assume the character of WMD as a result of the use of new technical elements in their strike or logistic devices. For example, if new technical elements such as fuelair ammunition, which produce powerful fuelair explosions leading to rapid combustion of the oxygen in the air and hence to mass asphyxiation, are added to classical rocket, artillery, aviation and similar systems".<sup>48</sup>

Some of these weapons are as follows:

- 1) Electromagnetic and infrared acoustic waves: "Infra-acoustic waves of relatively low frequency act on the basis of psycho-tropic principles causing fear and loss of consciousness, as well as pains in internal organs.

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47. Ibid., p.29.

48. Ibid.

Electromagnetic waves of low frequency act on the functioning of the heart - to suffocation and high frequency waves destroy brain-centres".<sup>49</sup>

ii) 'Ethnic weapons' would be those designed to act on existing biological and especially genetic differences between various ethnic groups, the utilisation of specific agents for selective attacks based on differences in blood groups, skin pigments, kinds of nutrition and other ethnic traits and characteristics tied to the geographical regions in which various ethnic groups dwell".<sup>50</sup>

The Greek peace movement has charged that the dermatologists participating in a US-NATO forces Conference in Spring 1980, on the Greek island of Corfu, were actually working on the development of ethnic warfare methodology. The residents of Corfu held protest rally.<sup>51</sup>

"The latest uncovering of germ warfare experiments in the USA included one 30 years ago originating at the Mechanicsburg, Pennsylvania. Naval supply depot which used a fungus that infected Black people while leaving Whites relatively unaffected. Obtained under the Freedom of Information Act by the Church of Scientology, the documents

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49. Ibid., p.30.

50. Ibid., p.30.

51. Vivian Raineri, "The horror called 'ethnic' warfare", Link, August 2, 1981, p.19.

reveal the fungus to have been 'Aspergillus Fumigatus Mutant C-2', selected to stimulate coccidiosis (Valley Fever) because Negroes are more susceptible to coccid than Whites.<sup>52</sup>

iii) Genetic weapons are designed to act by inflicting damage on the mechanism of transmitting inherited traits, for example, damage to the endocrinal and reproductive system, inducing sterilisation, etc.<sup>53</sup>

iv) Clean nuclear weapons are the result of the development of new nuclear materials, the so-called trans-plutonium and transuranium elements which could potentially be used to produce small-scale nuclear weapons involving a very small critical mass.

v) New ABM Systems: Some of the new weapons which are being developed would not only strengthen the ABM system but the whole strategic nuclear equation will change.

(a) Laser Technology (Light Amplification by stimulated Emission of Radiation) - "The stage at which it would be most desirable to intercept ballistic missile is in the early boost phase, when the missile is travelling at a relatively slow speed

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52. Ibid., p.19.

53. Mihaylovic, op.cit., p.30.

and presents a larger target before separation of the reentry vehicle".<sup>54</sup> With the development of LASER techniques it would be possible to intercept at that stage. Both the United States and the Soviet Union are close to deploying an effective high energy Laser in space, particularly after the success of the American reentry space shuttle 'Columbia' and the Soviet space-laboratory 'Soyuz'.

- (b) Particle beam technology is not yet at the same stage of development.
- (c) Plasma weapons, in which compact Plasmas would be accelerated to speeds of about 1/3rd that of light, would have significant mass and contain immense thermal energy and would be able to destroy any kind of ballistic missiles.

vi) Radiation weapons: These function on the basis of spreading ionising radiation without nuclear explosions for instance large scale destruction could be accomplished by dispersing radioactive wastes over large areas, using classical means such as bombs, rockets, etc.

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54. Stewart Menaul, Security Special, Conflict Studies, op.cit., p.11.

vii) Neutron Bombs: In the recent years neutron bombs appear to have caught military fancy. More than three years ago, the Pentagon mounted a clamour for the development, production and eventual deployment of this latest instrument of Mass Destruction - sometimes called a "clean bomb". Because of its low yield of blast and heat effect but high killing power, it would be able to destroy life without doing much damage to property. "It was even described with sick irony, as the perfect 'capitalist weapon' since life was expendable and property was not. Militarily, it was trumpeted to be an ideal 'theatre' weapon, wiping out the enemy tank forces and allowing a quick follow-through".<sup>55</sup> The recent decision by the Reagan government to manufacture these bombs has left everyone in dismay.

#### IV. CONCLUSION

This being the general nature of the WND, one can understand the urgency of the need for a ban on them - both existing as well as the new weapons of the future. The debate on new WND has just begun. But it is to be hoped that

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55. "Neutron Bomb", Patriot, 7 February 1981.



weapons of this kind will never be manufactured, for the existing arsenals themselves are sufficient for the self-annihilation of the mankind. Past experiences have shown that formal agreements won't solve the problem permanently. The most important requirement, however, is the self-realisation by the members of the International System of the suicidal nature of the WMD and the benefits of peaceful co-existence.

**CHAPTER TWO**

**CHEMICAL WEAPON SYSTEM:  
IN THEORY AND PRACTICE**

Chemical weapons or the "chemical agents of warfare are taken to be chemical substances, whether gaseous, liquid or solid, which might be employed because of their direct toxic effects on man, animals and plants".<sup>1</sup> The biological agents of warfare are taken to be those agents that cause disease or death in man, animals or plants following multiplication within the target organism. There are some similarities between chemical and bacteriological (biological) agents of warfare. For this reason, an attempt will be made to bring out the points of similarities and differences between these two types of weapons before analysing the various categories of chemical agents.

#### CHEMICAL & BIOLOGICAL WEAPONS

"All biological processes depend upon chemical or physico-chemical reactions".<sup>2</sup> This characteristic, sometimes, blurs the dividing line between a chemical agent and a biological one. For example, toxins are produced by living organisms, but as they themselves do not multiply, they are

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1. Chemical and Bacteriological (Biological) Weapons and the Effects of their possible Use, Report of the Secretary-General, United Nations, New York, 1969, p.5.

2. Ibid., p.6.

generally treated as chemical agents. In order to avoid this confusion the following ways of differentiating one agent from another have been suggested:

### 1. Toxicity

The chemical agents of warfare are far less potent on a "weight-for-weight basis" than the biological agents. This is seen from the fact that whereas the dose of a chemical agent is measured in milligrammes (1/1,000 of a gramme), the corresponding dose for biological agents is in the picogramme range (1/1,000,000 of a microgramme).

### 2. Time Gap Between Exposure and Effect

Although the speed of action is a function of the dose or quantity absorbed, the time gap between exposure and significant effect is very short in case of the chemical agents. It can be measured in terms of seconds, minutes or hours. The incubation period is correspondingly high (days or weeks) in case of the biological ones, as the agent has to multiply in the body of the victim before any significant effect is noticed.

### 3. Host Specificity

Of course, both classes of weapons can be used against the flora and fauna of a region but the biological agents have a much greater degree of host specificity. "Influenza,

for example, is essentially a disease of man, foot and mouth disease mainly affects cloven-hoofed animals, and rice blast is a disease confined to rice only".<sup>3</sup> But the chemical agents are known for their lesser degree of host specificity as a nerve agent can affect mammals, birds and even insects.

#### 4. The After Effects

Most of the biological weapons involve periods of prolonged convalescence lasting weeks or even months. The after effects of most of the chemical agents, however, do not last long.

#### 5. The Control of Contamination

If tactically employed, chemical agents can also contaminate areas far off from the target. For example, "should large quantities of chemical agents penetrate the soil and reach underground waters, or should they contaminate reservoirs, they might spread hundreds of kilometers from the area of attack".<sup>4</sup> But as the biological agents infect living organisms, their chances of being carried off by either travellers, migratory birds or animals to far off places are more which make the control of contamination far more tedious an affair.

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3. Ibid., p.8.

4. Ibid., p.8.

## CHEMICAL WEAPON SYSTEM

A weapon system based on toxic chemicals should be looked at as the sum of three interrelated parts: (a) the chemical agents of warfare, (b) the methods of delivery, and (c) the defences against such agents.

### (a) Chemical agents of warfare

All chemical substances cannot be taken as chemical weapons, in fact, many complex technological problems have to be overcome in transforming a chemical agent into a weapon system. Basing on their physiological effects, the chemical agents of warfare have been differentiated into two groups, (i) agents affecting men and animals, and (ii) agents affecting the plants. While analysing the types of agents, their effects on men, animals and plants have also been covered.

The first group of agents is also subdivided into two broad categories: (1) Lethal Chemical agents consisting of Nerve agents, Blister agents or Vesicants and Respiratory casualties agents, (2) Incapacitating agents consisting of the harassing agents, toxins and psychochemicals.

GENERAL CHARACTERISTICS  
OF SOME CHEMICAL WEAPONS

Type	Mechanism	Time for Onset of Effects	Examples
1. Nerve Agent 'G'	Interferes with transmission of nerve impulses	Very Rapid inhalation (a few seconds)	Tabun, Sarin, Soman
2. Nerve Agent 'V'	Interferes with transmission of nerve impulses	Very rapid inhalation (a few seconds); relatively rapid through skin (a few minutes to a few hours)	VX
3. Blister Agent	Cell-poison	Blistering delayed hours to days; eye effects more rapid	Sulphur Mustard, Nitrogen Mustard
4. Choking Agent	Damages Lungs	Immediate to more than three hours	Phosgene
5. Blood Agent	Interferes with all respiration	Rapid (a few seconds or minutes)	Hydrogen Cyanide
6. Toxin	Neuromuscular paralysis	Variable (hours or days)	Botulinum toxin
7. Tear and harassing Agents	Difficulty in breathing, coughing, nausea headaches, pulmonary edema in case of extreme doses (fluid in the lungs)	Quickly Incapacitate	CN, CS, IM
8. Psychochemicals	Affects nervous system to cause temporary disability by disrupting normal patterns of behaviour	Gradual	LSD, Mescaline, Psilocybin, Benzilales

9. Herbi- cides	Defoliation (death) or Desiccation (the drying out)	Days or weeks depending on the species of plant attacked, its age and the meteorological conditions	2, 4-D, 2, 4,5-T, Cacodylic Acid, Picloram Acid
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By 1941, three classes of chemical warfare (CW) agents were stockpiled by the main belligerents: asphyxiants, such as phosgene; blood gases, such as cyanogen chloride and hydrogen cyanide; and blistering agents, such as lewisite and the sulphur and nitrogen mustards. Chemicals for harassing purposes were also stockpiled; these included tear-gases and other irritants such as CN and adamsite.

By 1945, Germany had acquired massive quantities of a greatly improved type of lethal agent: Tabun, the first of a series of compounds that were later to be called nerve gases.<sup>6</sup> The post-war period found the chemical weapon designers busy developing the potentialities of tabun compound groups, like Sarin and Soman. This was due to the fact that estimates of the dose of inhaled-phosgene lethal to man are generally around 50 mg, while those for tabun and Sarin are about 2 mg and 1 mg respectively.<sup>7</sup>

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6. "Development of CBW", SIPRI Year Book of World Armaments and Disarmament, Almqvist & Wiksell, Stockholm, 1968-69, p.113.

7. Ibid.



The discovery of the V-agents increased chemical weapons capabilities, for the respiratory lethal dose of these substances in man is thought to be of the order of 0.1 mg. "These agents represented a major increase in effectiveness in a given situation and also an increase in the number of tactical situations where chemical weapons might be effective".<sup>8</sup> Along with this technological marvell, the congressional lobbying by the United States Army Chemical Corps resulted in quadrupled CBW Budget allocations. It was for this reason that 1955 was probably the year that chemical weapons stopped being regarded as historical leftovers and began widely to be seen as useful constituents of a modern military arsenal.

(b) The methods of delivery

After suitably choosing the chemical agents of warfare the next important thing that assumes primacy is the selection of a good delivery system. Unlike others, chemical weapons being a tactical weapon and very <sup>much</sup> dependent on the weather conditions, the area of attack and the potentialities of the agents, it is necessary that the delivery system should be an effective one.

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8. Ibid.

There are basically three different types of methods of delivery: (i) Ground-to-ground munitions (grenades, shells, rockets and missile war-heads); (ii) Air-to-ground munitions (large bombs, dispensers, spray tanks and rockets); and (c) Emplaced munitions (generators and mines).

During the First World War, chemical warfare was mainly fought with artillery gas shell, mortar, cylinder and liveness projector. But these were not suitable methods of delivery for they were not only very heavy (50 kg. and more) but required more personnel for their operations. They could not also be adapted to the mobile warfare conditions that gradually developed at the end of the war.

For example, cylinders were essentially trench-warfare weapons and thus irrespective of the size, they were ill-suited to a shifting front. But the chemical mortar, after some basic modifications (range, construction and rate of fire), became one of the attractive weapons of the second World War. Its attractions lay in its easy manoeuvrability and non-dependence on the weather conditions. "It could (also) set up high vapour concentrations with volatile agents or dense ground contamination with involatile ones".<sup>9</sup>

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9. The Problem of Chemical & Biological Warfare, vol. I, "The Rise of CB Weapons", SIPRI, 1971, p. 103.

Even though, the Livens projector, demanded a great deal of manpower and time for preparation, "it had the great advantage that if used in large enough batteries it could create sudden massive field concentrations of agents over large target areas".<sup>10</sup> It is reported that by the beginning of the Second World War, Britain had approximately 25,000 Livens projector projectiles on hand, filled with mustard gas or phosgene.

#### New Delivery Systems

Naval Ordnance: The naval units did not have any significant experience of chemical warfare during the First World War. Gas was, however, considered as an effective weapon against ships at sea because of the following reasons:

- a) The confined spaces of a ship helps the persistence of gas clouds;
- b) Decontamination on board a ship is a difficult task because, unlike the ground forces, the naval units cannot go out of the inbuilt contaminated area;
- c) "Meteorological conditions over large bodies of water are often much more suitable to drifting cloud attacks than over land".<sup>11</sup>

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10. Ibid., p. 104.

11. Ibid., pp. 96-97.

The fate of the U.S. ship, S.S. John Harvey corroborates the above points. When the ship carrying 100 tons of 100 lb mustard gas bombs was blown up during a German air raid, most of the bomb-filling found its way into the sea, where it dissolved in oil and floated on the surface. Thus, the people who jumped into the sea to save their lives became heavily contaminated with mustard gas.

Aerochemical arm or aircrafts: Aircrafts can be used for two types of chemical weapons - the bomb and the spray tank. During the Second World War, gas bombs constituted the dominant weapon in CW stockpiles. It was estimated in the early 1920s that "200 tons of Phosgene dropped in bombs from a comparatively small fleet of aircraft would be enough to kill every occupant of an area 100 miles square".<sup>12</sup> The London Times reported that "One aeroplane carrying 2 tons of a newly discovered percutaneous agent lewisite, presumably, could spray an area 100 feet wide and 7 miles long with enough agent to kill practically every man in it through his skin".<sup>13</sup>

Missiles: It was only during the late 1940s that work on CW missile warheads began. It is alleged that the Soviet Union was the first country to develop nerve gas missiles

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12. Noel-Baker, P., Disarmament. London, quoted in CBW, vol.I, Rise of GB Weapons, op.cit., p.99.

13. "A rain of death", The Times (London), 14 March 1927, quoted in CBW, vol.I, op.cit., p.99.

and warheads which Nato dubbed as the 'Frog' and 'Scud' Series. At the present time, the US inventory contains nerve-gas warheads, at least, for 'Honest John', 'Little John', 'Sergeant' and Lance missiles.<sup>14</sup>

Area denial operations: Chemical weapons were for the first time used by the United States against the guerrillas of Vietnam. Agents like CS were dusted onto the ground so that anyone passing across it stirred it up into an intolerably irritant cloud. The powder particles were coated with a silicone water-repellent to resist weathering and to remain effective even on damp or swampy ground.

Ground emplaced munitions:<sup>15</sup> The generator is a tank containing a chemical agent, a source of pressure and a nozzle through which the agent is forced. These generators are placed upwind of the target and then activated by a suitable device. Chemical mines would be placed in areas of anticipated enemy activity and would be activated by pressure or trip wires.

It must be emphasized that, however, well-designed the weapon-system is, an unexpected wind profile or temperature gradient over the target could easily render the whole attack useless. This implies that the effectiveness of a chemical

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14. GBW, vol.I, op.cit., p.101.

15. Chemical and Bacteriological (Biological) Weapons and the Effects of their possible Use, Report of the Secretary-General, United Nations, op.cit., p.15.

attack would depend on the previous knowledge of target conditions. It is for this reason that a great deal of research is devoted to the task of improving the meteorological apparatus and extending its effectiveness.

(c) Defences against such agents

An important aspect of a military system is a well integrated defensive system. This assumes much importance particularly in case of the chemical weapons. A comprehensive chemical defensive system includes, (1) Detection and Warning; (2) Physical Protection; (3) Medical Protection; and (4) Decontamination. The complexities of the defensive system and the cost incurred on that have been so much taxing that the animals and plants have been excluded from such a system. Although efforts are being made to make the individuals less vulnerable to a chemical attack, the very nature of an offensive chemical weapon system goes against such attempts. Following are the different components of a comprehensive defensive system:

(1) Detection and Warning

Before taking any protective measure, rapid identification of chemical warfare agents and subsequent warning are required. The objective of this detection and warning mechanism is to tell the people when to put on the protective clothes and when to take off.

During the First World War, odour and colour were mainly taken as the indices of chemical agents in alerting the personnel that a chemical attack had been launched. The nerve gases, however, were in an altogether different category. They are colourless, odourless and tasteless chemicals. It was thus possible that entire combat units might be put out of action, before they took any protective measures.

Because of this uncertainty, it is desirable to devise a system of instruments which could detect the presence of toxic chemicals at concentrations much below those having physiological effects. And the time required for such detection should be very short, "as a person could inhale a toxic amount in a short time because he breathes 10-20 litres of air per minute".<sup>16</sup>

One of the instruments used for the purpose is a 'detector kit' which contains sampling tubes and reagent buttons, papers, etc., which after being exposed to particular chemical agents, change colour or exhibit some other change to warn the presence of such agents. "Warning devices which have been devised incorporate sensitive detectors that actuate an automatic alarm which alerts individuals to take protective

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16. Report of the Secretary General, op.cit., p.22.

action before a harmful dose of agent is received".<sup>17</sup>  
 In spite of the development of these techniques and instruments a detection and warning system has not yet been developed which can detect all kinds of agents and warn within a safe period of time.

## (2) Physical Protection

Since the skin and the respiratory tract are most vulnerable to chemical attack, it is desirable to establish a physical barrier between the body and the chemical agents to protect these vulnerable parts. There are broadly two types of protective system: (i) individual, and (ii) communal.

### (1) Individual protection

Before the advent of mustard gases and the nerve agents the main target of attack was the respiratory tract. So protective masks were the first line of defence. This respirator design was based on a filter and absorption mechanism. Some of the respirator designs used resin-wool particulate filters, asbestos fibres, micron-diameter glass and plastic fibres and activated charcoals.

In order to protect the skin from mustard gases and the nerve agents, anti-gas protective clothings were developed. The first attempt at providing anti-vesicant clothing was

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17. Ibid., p.22.



the First World War use of oil cloth<sup>18</sup> But this was also heavy and impermeable to air and water vapour, with the result that its wearer quickly became overheated and exhausted. In the early 1930s the United States developed a clothing-impregnating process based on CC-2 material, which would retain any vesicant penetrating the clothing but without interfering with its air and water-vapour permeability. During the interim period personal decontaminants were available which reduced the level of nerve-gas casualties from an intolerable level to a tolerable one. "Another approach towards providing skin protection has been to develop special overgarments that can be worn on top of normal battle dress whenever there is a risk of chemical attack".<sup>19</sup>

(ii) Communal protection

It takes the form of static or mobile shelters, which are insulated with a sophisticated mechanism for the intake and outlet of oxygen and thus accommodate groups of people. But it is a very costly affair and can be made available only to a few groups of military or civilians; and that too for a limited period.

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18. CBW, vol.I, Rise of CB Weapons, op.cit., p.90.

19. Ibid., p.91.

### (3) Medical Protection

There is no general 'prophy-lactic treatment' to protect against chemical attacks, however, the skin can be protected from the vapours (not liquid) of blister agents by various ointments. Nevertheless, the degree of casualties can be lessened if antidotes are administered before or within a very short time after exposure to chemical agents. For example, autoinjectors were devised with which each soldier can give himself a nerve-gas antidote as soon as he begins to feel the symptoms of nerve-gas poisoning.

### (4) Decontamination

Decontamination is a process to clear an area or instruments to bring it to safe level, free from the contaminants. "A wide range of chemicals could be used as decontaminants, the choice depending on the particular agent which has to be neutralised, the type of surface that needs to be treated, the extent of contamination and the amount of time available".<sup>20</sup> The first of such decontaminants to be used against mustard gas during the First World War were bleaching powder and potassium permanganate. "By World War II, 'super chlorinated bleaching power' was the most common general-purpose decontaminant".<sup>21</sup>

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20. Secretary General's Report, op.cit., p.25.

21. GBW, vol.I, op.cit., p.94.

CHEMICAL WEAPON SYSTEM  
IN USE

Down through the ages combatants have enlisted the aid of chemistry and "the 20th century improvements have merely escalated the age-old practices".<sup>22</sup> So it would be unfair to say that the First World War was the harbinger of chemical warfare. In fact, chemical weapons had been used many times before 1914.

"Poisonous smoke compositions based on alkaloids and toxins are described in Indian, Chinese and European military treatises".<sup>23</sup> Modern chemistry has isolated a toxin known as abrin from a seed 'Abrus precatorius' which had its mention in the Arthashastra of Kautilya (4th century B.C.), "The Chinese Sung Dynasty text Wu Ching Tsung Yao (Essentials of the Military Classics, ca 1040 A.D.) describes a toxic-smoke projectile containing powdered aconite tubers. The Moors are said to have used aconite extracts as arrow poisons against the Spaniards in 1483".<sup>24</sup> Weapons equivalent to the modern 'psychochemicals' had their mention in the 'Ramayana' and

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22. Seymour M. Hersh, "Chemical and Biological Warfare - America's Hidden Arsenal", MacGibbon & Kee, London, 1968, p.3.

23. CBW, vol.I, op.cit., p.126.

24. Ibid., p.126.

the 'Mahabharata'. Thucydides tells of the use of gas during the siege of Plataea in 429 B.C.

In the middle ages also there were instances of the use of chemical weapons. In 1456, a drifting cloud attack with an arsenical smoke was used by Hunyadi in his defence of Belgrade against the Turks. "The Christians dipped rags in the chemical and burned them, creating a toxic cloud".<sup>25</sup>

With the advancement of knowledge in chemistry, there developed new chemical weapons, for example, organoarsenical bombs and shell were used during the Crimean War in 1855; chlorine shell and other devices were used during the American Civil War. At the end of the 19th century, picric acid in artillery shells was used by the Britain troops against the Boers.

These instances provide enough evidence to refute the contention of those who believe in the confluence of chemical science and military technology only during the First World War. However, that War was a watershed in the history of chemical warfare during which the whole of the chemical military system seemed to have been used in a more sophisticated way. And it was also remarkable from the point that

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25. Seymour M. Hersh, *op.cit.*, p.4.

it mobilised the world public opinion against the horrors of any future possible chemical war.

In spite of the conclusion of treaties and protocols to ban its use, chemical agents are alleged to have been used in quite a good number of cases. The special issues of SIPRI (6 volumes), collectively entitled as 'The problem of chemical and biological warfare' have given details about these instances and allegations. The following is a brief summary of the instances and allegations of the use of chemical weapons:<sup>26</sup>

- (1) 1914-18 - The use of chemical agents during the First World War will be dealt in detail while discussing the Restraint System in a subsequent chapter.
- (2) 1919-21 - Chemical weapons were used by the allied forces during the Russian Civil War. The M-device was used for the first time as an air-dropped weapon against the Bolshevik Forces.
- (3) The early 1920s - It was alleged that British forces had used gas weapons during peace-keeping operations in the Middle East and around the North-Western Frontier of India.

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26. For details, see GBW, vol.I, op.cit., "Instances and Allegations of GBW".

- (4) The mid-1920s - There are reports stating that the French and Spanish aircrafts dropped mustard-gas bombs during the Moroccan wars.
- (5) 1935-36 - The Soviet Union complained that CW agents (60 percent vesicants and 40 percent asphyxiants) were used during the Italian invasion of Ethiopia which resulted in 15,000 casualties.
- (6) 1936 - Lachrymators and other gas weapons are stated to have been used during the Spanish Civil War.
- (7) 1937-45 - According to one American report, Japan had used lethal chemical agents like CN, DA, DC, Phosgene, Hydrogen Cyanide, Mustard Gas and Lewisite against the Chinese. It is also stated by one Soviet authority that upto 10 percent of the total losses suffered by the Chinese armies were due to chemical weapons.
- (8) 1939-45 - Although most of the belligerents possessed modest chemical stockpiles just before the outbreak of the Second World War, which continued to increase during the War, barring certain incidents, these stockpiles remain unused.
- (9) 1945-49 - During the Chinese Civil War.

- (10) 1947 - By French forces in Indo-China.
- (11) 1949 - Clouds of a respiratory irritant (Sulphur Dioxide) had been used by the Greek Government to drive guerrillas out of caves.<sup>27</sup>
- (12) 1951-52 - The Americans were accused by the Chinese of having resorted to chemical warfare in the Korean War. "An official Chinese news agency report, quoted by Peking radio on 5 March, 1951, stated that in the early afternoon of 23 February two U.S. aircraft dropped bombs charged with poison gas of an asphyxiating type on North Korean position".<sup>28</sup>
- (13) 1963-67 - There were reports about the employment of chemical weapons by the Egyptian forces during their intervention in the Yemeni Civil War.

Use of chemical weapons in Vietnam (1961-70)

Indo-China provided the battleground, where we find the instance of a massive scale use of chemical weapons in modern times. This was the first time when anti-plant

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27. New York Times, 4 January 1949, quoted CBW, vol.I, op.cit., p.157.

28. New York Times, 5 March 1951, quoted CBW, vol.I, op.cit., p.158.

chemical agents were used either to defoliate vegetation or to destroy food crops. Harassing and other lethal agents were also used. While in most previous instances the use of chemical weapons was vehemently denied by the accused party, the United States and the South-Vietnamese Army (ARVN) admitted the use of such agents. They, however, did not consider this use as constituting chemical warfare.

### Effects of Defoliants

"According to preliminary statistics, 1,086,000 hectares of farmland and forests were exposed to chemicals in 1969. In the first 9 months of 1970, the stricken area ran to 415,000 hectares and, since 1961, all South-Vietnam provinces have been continuously sprayed with chemicals.... virgin forests where grew hundreds of species of trees are now deprived of their foliage and strewn with dead trees. In many regions, one can cover 20 to 30 kms without seeing a tree in leaf, a bird or an insect. With the destruction of these forests, even a minor flood can work up to a catastrophe".<sup>29</sup>

These massive sprayings of defoliants have brought about serious consequences on the ecology of the region and exerted noxious effects on animals and men. "Over 1,293,000 people were poisoned from 1961 to 1969. Most of the victims suffered chronic diseases, ophthalmologic affections, gastro-

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29. Vo Hoai Tuan, "Chemical Warfare - Some data on chemical warfare in South Vietnam in 1969-70", Vietnamese Studies, vol.29, p.37.



intestinal troubles, paralysis, etc. In the first 9 months of 1970, 185,000 people were affected over 300 fatally".<sup>30</sup>

But the American Department of Defence has rationalised the use of such defoliants before a Congressional Committee on the ground of self-defence. It was stated that <sup>herbicides</sup> ~~were~~ useful in keeping down the growth of high jungle grass, bushes and weeds, and thus opened fields of fire and afforded observation (both aerial and horizontal) for outposts to prevent surprise attack and infiltration.

Harassing agents - Irritant-agent weapons such as hand-grenades containing CN, DM and CS were also used against the Vietnamese in close coordination with conventional fire power to ensure tactical victory. On 19 December 1968, an American Lieutenant Colonel of the Air Cavalry Division told an AFP correspondent: "At each engagement with the enemy we started with many air bombardments during which napalm was sometimes used. Then our aircraft lavishly sprayed CS to drive the enemy out of their shelters. While they were in disarray, we called for artillery shelling. I can assure you that when all that had been done and they began to feel dizzy we sent in our troops.....".<sup>31</sup>

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30. Ibid., p.40.

31. Vietnamese Studies, vol.29, op.cit., p.124.

There is a considerable amount of allegation and documentation that in addition to CS, CN and DM, a number of chemical casualty agents had been employed by the American and South Vietnamese forces.

By using gases in combination with other weapons, U.S. troops deliberately perpetrated mass massacres in South Vietnam. Toxic gases were recklessly used against populous regions at an ever increasing tempo and in ever higher concentrations.

There are also allegations that Portugal used gas in 1968 against the rebels in Portuguese Guinea and that Israel also used gas against the Palestinian guerrillas in 1969.

On 14 December 1970, the U.N. passed a resolution condemning the Government of Portugal for the use of chemical methods of warfare against the peoples of Angola, Mozambique and Guinea (Bissau).

Both ZAPU (Zimbabwe African Peoples Union) and ZANU (Zimbabwe African National Union) also alleged "that on several occasions authorities have introduced poison into certain tributaries of the Zambezi River in the belief that these waters were essential to guerrilla bases in the area".<sup>32</sup>

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32. CBW, vol.I, op.cit., p.212.

The above instances of the use of chemical weapons and their effect give a clear picture of the abnoxious nature of chemical warfare and thus necessitates a discussion on the restraint system that has been in operation as well as its shortcomings.

**CHAPTER THREE**

**CHEMICAL WEAPON RESTRAINT SYSTEM -**

**A VISCERA**

**(PART ONE)**

For reason of systematization, the study in restraints on chemical weapons can be dissected into four parts. Even though chemical weapons are said to have been used prior to the First World War, as mentioned earlier, it was during this war that they were used on a large scale to pose a serious problem. The periods chosen for the analysis of the restraint system are as follows: The First World War, The Interwar Phase and the Second World War.

## I. THE FIRST WORLD WAR

It was during this War that the chains of a feeble restraint system were loosened. The consequence was that the world witnessed a grand exhibition of the most macabre weapons the scientists had gifted to the world. But inspite of this fact if we take an autopsy of this war we find some interesting developments both of incentives and constraints, which will be of some use, later on, when we examine the restraint system in details.

There have been conflicting reports as to who first used the chemical agents in the First World War. Some<sup>1</sup> attribute it to the French against German and some others<sup>2</sup> accuse the German for using it against the Russians in 1914.

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1. Hanslian and Mueller-Kiel, vide p.6 reference given in "Chemical Warfare: A Study in Restraints", by Frederic J. Brown, 1968.
  2. Maj. Gen. C. Foulkes, "Gas! The Story of the Special Brigade", pp.29-31. Ref. Brown, op.cit., p.7.

But there is a general agreement among scholars that the most important use of chemical agents occurred on 22 April 1915, and it was the German who used it against the allied troops in the second battle of Ypres.

Let us now examine two important questions: (1) Why did the German use chemical agents? and (2) What was the consequence of this first use?

(1) Coming to the first point we see that the initial use was the result of a civilian research and the military did not partake in it. One scholar has written that "the very nature of chemical warfare inhibited its acceptance by the German military in 1915. The chlorine gas employed at Ypres was a product of the civilian laboratory developed through the initiative of the brilliant German chemist, Frits Haber and employed on the battlefield by specialists under the supervision of a civilian chemist".<sup>3</sup> It was because the civilians and the reservists wanted to rescue the German military professionals, who were in trouble due to a shortage of conventional artillery units and ammunition and their inability to develop any other effective means of overcoming the protracted position warfare that Germany had to avoid.

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3. Brown, op.cit., vide ref. Sir E. Thorpe, "Chemical Warfare and the Washington Conference", Journal of the Society of Chemical Industry in Chemical Warfare, August 15, 1922, pp.14-15.

(2) But what were the after effects? Did Germany win by this first use? This use was adequate to alert the Allies to the reality of chemical weapons but naive and inadequate to ensure any remarkable success. In the initial phase, the Allied troops did retreat in panic and disorder but this was solely due to their lack of preparation against any such tactical surprise. The Germans were oblivious of any speedy development of defensive measures by their enemies and of any possibility that the Allies could retaliate in kind. After this battle the German military establishment had no other way to accept the reality of chemical war.

Five months elapsed before the British launched their gas attack at the battle of Loos on 25 September 1915. This delay should not make us believe that the British was quite unaware of scientific research in this area. Rather <sup>the</sup> examination of some of the reports would reveal that they had considered the development of chemical agents but later abandoned the idea. It is said that the British Government had considered using incapacitating noxious gases (sulphur fumes) as early as the siege of Sebastopol in the Crimean War.<sup>4</sup> By March 31, 1915, experiments were being conducted with a view to the possible use of non-lethal gases in the Dardanelles campaign.<sup>5</sup>

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4. Sir G.D. Bart and S.G.D. Ramsay, *The Panmure Papers* (London), Hodder and Stoughton, 1908, pp.340-41, vide ref. Brown cited earlier, p.7.

5. Brown, *op.cit.*, p.8.

but were curtailed on orders by Winston Churchill.

It is thus conceded that the delay in British retaliation was more due to unpreparedness than any other reasons which are often attributed to extol British policy. But why was this unpreparedness? The answer to this question would bring to the fore the existence of the pre-war restraint system. The following reasons can be attributed to the British delay in retaliation:

- i) Lack of a developed chemical industry due to the monopoly which Germany had on dye stuff manufacture;
- ii) British respect for Article 23 of the Hague Convention of 1899 which restrained the signatories from use of projectiles the sole object of which was the diffusion of "asphyxiating or deleterious gases" and forbade the use of weapons which caused "unnecessary suffering"; and
- iii) Fear of the implications of an unlimited use of these weapons.

There was a sort of military constraint as well. Thus we see that the first use of gas by Germany had a very short term effect. Once the British came into the fray, there was gradual expansion of the use of gas. But the very nature of the gas used relegated chemical warfare to a secondary role. This primitive gas lost its strategic role due to its non-persistent



nature; it had to be breathed into the lungs to create any effect. This practical difficulty "placed a premium upon the ability to surprise the enemy by delivering large amounts of gas to a selected location before the enemy could react and mask".<sup>6</sup> And "once the Allied and German troops acquired protective equipment.....gas lost its critical role".<sup>7</sup> This burden of a logistic requirement to have <sup>a</sup>tactical advantage became a military constraint to remain valid even today.

Again it was Germany which brought an end to this problem of technical snag by achieving a second major technological breakthrough in the form of the invention of mustard gas - "a persistent agent that could disable by coming in contact with the skin". It was particularly dangerous because the soldier did not realize that he had been gased for several hours, by which time he had already received a disabling or lethal dose. "Under particularly favourable climatic conditions, mustard gas could retain its disabling properties for several weeks".<sup>8</sup>

The ensuing months witnessed a tremendous propaganda warfare against the employment of gas and reached the climax with the publication of the Bryce Report (May 1915) and the sinking of Lusitania by the German submarine (May 1915).

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6. Brown, op.cit., p.11.

7. Ibid., p.10.

8. Ibid., p.11.

Moreover, the entry of the United States into the war resulted in a tremendous expansion in the infrastructures for chemical warfare by the belligerents. No doubt, the Allies retaliated in June 1918, but the mustard-reins which Germany held from July 12, 1917, enabled it to cause the British suffer from mustard gas casualties to the tune of 33,000 by March and April of 1918 alone.

"By November 1918, it was apparent that chemical warfare had three central characteristics:

- a) It was an extremely versatile weapon, tractable to almost any tactical situation;
- b) The logistic requirements complicated the battle-field enormously; and
- c) Its employment demanded unprecedented sophistication of individual and unit training".<sup>9</sup>

## II. THE INTERWAR PHASE

The immediate concern of the victorious Allied powers was to put an end to the use of poison gas. Since it was Germany which had started the abhorrent form of warfare, the peace terms imposed by the victors denied Germany the right to manufacture or import toxic agents. Article 171 of the

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9. Ibid., p.33.

Treaty of Versailles stated: "The use of asphyxiating, poisonous or other gases and all analogous liquids, materials or devices being prohibited, their manufacture and importation are strictly forbidden in Germany".<sup>10</sup>

But the victorious powers tried to exploit the situation for their commercial advantages too. This was manifested when the British wanted an amendment to the Article 171 of the Treaty. The controversial amendment proposal required the Germans to surrender "all war material in excess of specified armament levels"<sup>11</sup> and "all chemical processes including drawings of plants, manufacturing instructions and reports of research to date used during the war or for the production of substances from which such things were or can be made".<sup>12</sup>

President Wilson, however, was strongly against any such amendment. He objected to it on three grounds:

- i) The issue was more of economic importance than military;
- ii) The amendment would give "an unfair commercial advantage to rival industries"; and

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10. Ibid., pp.52-53.

11. Ibid., p.53.

12. Ibid., p.53.

iii) There could not be any assurance that the Germans would pass on all the secrets in their possession.

But the pressure of the business lobbies was mounting. Wilson had to yield to a compromise formula "which deleted specific reference to synthetic and nitric acids and any requirement for inspection".<sup>13</sup> The new Article 172, which incorporated the compromise amendment, read as follows:

"Within a period of three months from the coming into force of the present Treaty, the German Government will disclose to the Governments of the Principal Allied and Associated powers the nature and mode of manufacture of all explosives, toxic substances or other like chemical preparations used by them in the war or prepared by them for the purpose of being so used".<sup>14</sup>

Without the important provision of inspection the Article remained a dead letter.

Efforts continued in the United States and Britain for securing national legislation that would provide protective tariffs and even embargoes against the import of certain chemical products. There were massive propaganda campaigns

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13. Ibid., p.56.

14. Allied & Associated Powers, The Treaty of Peace, p.81.

to magnify the dangers that the United States would face in the future without a large chemical industry. In Britain prominent newspapers like 'The Times' took part in a similar campaign.

The advocates of chemical industries cited the problem of the ease of the manufacture of chemical warfare (CW) agents and the problem of the impossibility of controlling such manufacture. For example, Phosgene was produced by a simple expansion of existing plant used in the production of some of the common dyes. Mustard gas production proceeded almost automatically by the expansion of existing Indigo plant.

In the United States it was the Army Chemical Warfare Service (CWS), an organisation seeking an independent status, that increased the credibility of the campaign by providing some technical information and impressive military assessments of chemical weapons. Finally, in July 1918, the War Department was convinced of the necessity of a unified gas corps and CWS was given an independent status.

It was, however, the Presidential Election of 1920 that brought out some drastic changes. The new incumbent, President Harding, backed up by the Republican Party heralded this change, as they were not in favour of pursuing free-trade policies.

In addition to this change in the political landscape, three other factors were responsible to compel the U.S. to convene the Washington Conference on the Limitation of Naval Armaments one of whose objectives was to "control for humanity" the use of new agencies of warfare.<sup>15</sup> These are as follows:

- i) A threat perception of an impending arms race in the Pacific;
- ii) Increasing demands both by the public and the Congress for limitation of such armaments; and
- iii) Awareness of the inadequacy of the then existing legal restraints of the Hague Conventions.

In the Conference the following treaty was proposed by the United States:

"The use in war of asphyxiating, poisonous or other gases and all analogous liquids, materials or devices, having been justly condemned by the general opinion of the civilized world and a prohibition of such use having been declared in treaties to which a majority of the civilized are parties;

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15. When asked by the French Delegate, Secretary Hughes defined the new agencies of warfare as gas, aircraft and submarine.

.....Now to the end that this prohibition shall be universally accepted as a part of International Law binding alike the conscience and practice of nations, the signatory powers declare their assent to such prohibition, agree to be bound thereby between themselves and invite all other civilized nations to adhere thereto".<sup>16</sup>

This was the old wine in a new bottle - a restatement of the provisions of the Versailles Treaty. Moreover, as the Versailles provisions were also based on the Hague Conventions, British and French delegates were reluctant to accede to the draft Treaty. As the efficacy of the Hague Conventions was already tested during the the First World War, a reiteration of principles without a provision for sanctions in case of violations of the treaty was not going to bring any change at all. Though signed by the participants, the treaty could not come into force as France refused to ratify it.

It is important to note that the non-inclusion of any concrete sanction provision was not considered as a serious lacunae by the United States. It was maintained that "the primary sanction to chemical warfare was to be public opinion".<sup>17</sup>

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16. Vide p.67, Brown, op.cit.

17. Brown, op.cit., p.71.

To vindicate its stand the Advisory Committee conducted a nationwide gallop poll to seek public opinion on the various subject of the Conference. The result proved beneficial. Out of 13 million responses received, the number of people voting for abolition was 366,975 and a meagre 19 wanted retention with restriction in use.<sup>18</sup>

The sanction of public opinion is not sufficient for prohibition of the use of weapons. Of the many variables of foreign policy, public opinion is only one. It not only varies from country to country but from time to time as well. Thus depending on such an intangible factor would not be a prudent course for any country.

But in order to keep up the leading role the United States thought of another ploy in the name of Geneva Protocol, under the auspices of the League of Nations.

The Conference accepted the following draft proposed by the United States:<sup>19</sup>

"Whereas the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world; and

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18. Ibid., p.69.

19. See Appendix 2, for The Text of the Protocol for the prohibition of the use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare.



Whereas the prohibition of such use has been declared in Treaties to which the majority of powers of the world are parties; and

To the end that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations;

Declares: That the High Contracting Parties, so far as they are not already parties to treaties prohibiting such use, accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration".

But this declaration too was not without loopholes.

The omission of the important provision of sanctions for non-compliance remained non-rectified. Besides, the Protocol did not have any binding force in a war involving non-signatories. So the situation remained the same as before. But the one significant change it made was the non-reference to the Hague Conventions, which the earlier treaties mentioned, to derive their binding force. Thus "Geneva Protocol stood alone".<sup>20</sup>

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20. Brown, op.cit., p.102.

Even though the United States was taking shelter behind the facade of the sanction of public opinion, in actual practice it believed in readiness for chemical warfare as forming the only pragmatic restraint. Ratification of the Protocol would have meant curtailment of resources for such a readiness. The result was the rejection of the Geneva Protocol by the Senate. How the primer was attached to the deterrent value of a readiness, was clear from a statement of the Secretary of State: "All governments recognize that it is incumbent upon them to be fully prepared as regards chemical warfare, and especially as regards defence against it, irrespective of any partial or general international agreements looking to the prohibition of the actual use of such warfare",<sup>21</sup>

This policy of "prohibition with preparation" marked a major shift in the American chemical warfare policy and brought it in conflict with that of the European powers. While the latter wanted effective prohibition including a control of domestic production, trade and meaningful inspection, the former only wanted a limited prohibition.

The Geneva Disarmament Conference, convened in 1932, gave a further stimulus to the neglected chemical warfare issue. As required by the British draft resolution, which was passed by the Conference in July

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21. Letter Secretary State for Mr. C.L. Parsons, Sec. American Chemical Society, 7 December 1926, quoted in Brown, op.cit., p.108.

1932, the conditions for the prohibition of chemical, biological and incendiary warfare were laid down in what came to be known subsequently, as the MacDonald Plan.

This plan had some far-reaching provisions like the following:

- 1) It absolutely prohibited the use of chemical, biological or incendiary weapons against any nation;
- 2) Secondly, the definition of the chemical weapons was broadened to include toxic, asphyxiating, lachrymatory, irritant or vesicant substances;
- 3) All preparations were prohibited even in time of peace;
- 4) As regards the controversial sanction provision, the Permanent Disarmament Commission was invested with some restricted powers of investigation;
- 5) But the only provision that again stopped short of total prohibition stated that "the Nations were free to prepare in regard to materials and installations intended exclusively to ensure individual or collective protection and to train to ensure individual or collective protection".

Even though this was much more restrictive in comparison to the earlier ones, the new American President Franklin Roosevelt gave his approval to it on May 16, 1932. This was because the tense situation in Europe required minor concessions to a "tolerable restriction on chemical warfare preparedness".<sup>22</sup>

But even this limited prohibition also could not become binding on the United States. The fact that the concessions of 1933 were never codified in an International Convention enabled the United States to proceed with preparations for chemical warfare. This is evident from the new policy of the Joint Military Board announced in 1934, which unequivocally stated: "The U.S. will make all necessary preparations for the use of chemical warfare from the outbreak of war. The use of chemical warfare, including the use of toxic agents, from the inception of hostilities is authorized, subject to such restrictions or prohibitions as may be contained in any duly ratified International Convention(s), which at that time may be binding upon the U.S. and the enemy's state or states".<sup>23</sup> And the Basic Field Manual of the American War Department in 1934 clarified

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22. Japan withdrew from the League in March 1933. Germany again became a trouble spot under the influence of Hitler and National Socialism.

23. Quoted in Brown, op.cit., p.122.

that "the U.S. is not a party to any treaty, now in force, that prohibits or restricts the use in warfare of toxic or non-toxic gases, or of smoke or incendiary materials, etc."

But viewing from a pragmatic angle, all these statements appear innocuous as the American Army at that time had neither the training nor the equipment to enter into protracted gas warfare. This position, along with some other practical restraints would be discussed in detail in the following section.

Thus it can be stated that the inconsistent and incoherent policy formulations and implementations of the powers acted as a 'confusing restraint system' to avoid any type of largescale occurrence of chemical warfare during this interwar phase.

### III. THE SECOND WORLD WAR

Except for the stray case of the Japanese use against the Chinese, the Second World War showed a unique case of the non-use of chemical agents of warfare. This is significant because the trend which continued from local use to that of largescale use in the First World War, showing an upward movement, suddenly declined in this war. But what could be the reason? Is it a sufficient test to infer that the

civilised nations of the world became genuinely civilised to renounce the use of this barbarous and inhuman weapon of warfare? Or does it indicate a complex interplay of factors which contributed to an ad hoc system of restraints?

No single factor can be considered as decisive in answering this complex question. A myriad of factors interacted in such a way that a vicious circle was maintained by them. The result was the prevention of any exhibition in grand scale of the chemical weapons both old and newly invented.

The main streams of the restraining river were basically two, which had their origin and sustenance from some other contributories. The former are as follows: (a) Military unpreparedness, (b) Faulty threat perception; and the latter consisted of (a) Public opinion, (b) Personality factor of the national elites, and (c) Legal obligations. Before analysing the main factors, it will be useful to have a resume of the subsidiary ones so that we can have enough space to make a countrywise critical appraisal to test the validity of these main factors.

Subsidiary strands of the Second  
World War restraint system

(a) Public opinion

Very often, "public opinion" is accorded a high status by the analysts of any restraint system. But it could be more appropriate to consider it as a subsidiary factor.

The period immediately after the First World War witnessed a plethora of propaganda campaigns in almost all countries against the horrors of chemical warfare. Death is, no doubt, accepted as a logical outcome in any kind of war but to treat a man like a rat or a cockroach is inherently repugnant to all decent human instincts. It is this psychological element that helps in moulding public opinion.

As discussed in an earlier section of this chapter, this restraint of public opinion was accorded great importance by the Americans at the Washington Conference in response to the demand for sanctions. Gallop polls, conducted during the interwar period and during the Second World War period revealed a strong public revulsion against the use of such weapons. But even though the American policymakers emphasised this strand of restraint, they were aware of its weakness. They, therefore, changed their policy from complete prohibition to "prepared prohibition". The results of another gallop poll in 1945 confirmed this position. It was asserted that a

classified gallop poll indicated that over 70 percent of those questioned favoured the use of gas. The reason was that the American people were anxious to end the war and they, too, gradually accepted the use of gas when press reports flooded into the country showing the barbarous use of chemicals by the Japanese.

In view of these quick changes in the mood of a people public opinion, though relevant, cannot be given the status of an effective restraint. But its usefulness can be better understood when we consider the attitudes of the national elites.

(b) Personality factor of National Elites

Whatever may be the level of preparedness of a country, the final decision to use the weapons depends upon the national elites. But while taking decision either to make the country prepared or to use them, they are motivated by two factors - personal attitudes and the situational pressure. It is because of this dual nature of the decision-making process that the personality factor of the national elites is given a secondary status in the restraint system. But this section attempts to highlight the relevant portions of this element, while pointing out the weaknesses inherent in it, which was or could be utilised later on to break the restraint system.



Both President Hoover and President Roosevelt vehemently opposed the use of chemical agents in warfare. While vetoing a Congressional bill, which sought to change the name of the chemical warfare service to the chemical corps, President Roosevelt said:

"It is my thought that the major functions of the chemical warfare service are those of a service rather than a corps..... It has been and is the policy of this Government to do everything in its power to outlaw the use of chemicals in warfare. Such use is inhuman and contrary to what modern civilization should stand for..... I am doing everything in my power to discourage the use of gases and other chemicals in any war between nations. While, unfortunately, the defensive necessities of the U.S. call for study of the use of chemicals in warfare, I do not want to aggrandise or make permanent any special bureau of the Army or the Navy engaged in these studies. I hope the time will come when the chemical warfare service can be entirely abolished".<sup>24</sup>

Churchill, too, declared in May 1942, "We are ourselves firmly resolved not to use this odious weapon unless it is first used by the Germans".<sup>25</sup>

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24. Quoted in Brown, op.cit., pp.124-25.

25. Mr. Churchill on growing air offensive, Times, 11 May 1942 (5).

Hitler also had a strong personal antipathy towards CW, which apparently stemmed from his experience in the First World War when he was temporarily blinded by a British mustard gas attack near Ypres. Hitler has written in Mein Kampf, "I stumbled back with burning eyes taking with me my last report of the war. A few hours later, my eyes had turned into burning coals; it had grown dark around me".<sup>26</sup> It is said that Hitler was not only against the chemical warfare preparedness of the rearmament period, but that he did not even visit the chemical warfare development exhibitions.

It can be maintained that in the absence of the situational pressure, this personality factor could hold good for some time. If the situation changed to a critical point, there is no doubt that the national leaders might change their minds.

(c) Legal obligations

Legal restraint on anything is derived from different sources: customary practice of the nations, treaties and conventions. In the matter of chemical weapons, we find the existence of these requirements. The civilized nations

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26. Adolf Hitler, "Mein Kampf", translated by Mannheim R., 1943, p.202.

of the world did renounce the use of chemical weapons. The hectic interwar efforts to conclude a treaty to ban such use indicate the concern of the nations regarding such barbarous methods of warfare. But a treaty without provisions for sanctions, in case of violations, cannot provide a sufficient restraint. The Hague Conventions of 1899 and 1907, the Washington Conference, the Versailles Peace Treaty the Washington Conference and finally the historic Geneva Protocol of 1920 all failed in this respect.

Even with provisions for sanctions, a legal system of restraints has its limitations. Treaties have been in existence ever since the civilised nations decided to codify the norms of civilised behaviour. But wars, battles and treaty violations have not ceased. So in the presence of such treaties also, chemical weapons could have been used if the exigencies of the situation demanded such use. And the states would have taken shelter behind some pretext or other to rationalise their acts.

However, one cannot completely rule out the contributory role of this restraint. In fact, the legal prohibition of the Treaty of Versailles and the Geneva Protocol put Germany in a straitjacket for a decade. Even though, it achieved some technological breakthrough like the nerve agents in the interwar period, it could not make use of it because of

uncertainty of reaction by the other side. A wrong perception that the Allies, too, must have developed such weapons acted as a real restraint. "Thus a former legal restraint helped indirectly to negate a major technological breakthrough".<sup>27</sup>

Primary strands of the Second World War restraint system

As pointed out earlier, the main strands of the restraint system consist of (a) Military unpreparedness, and (b) Faulty threat perception.

(a) Military unpreparedness

This too is a result of many problems faced by the military establishments of the leading powers and can be divided into three types, (1) technical constraints, (2) ethical problems, and (3) some other specific problems.

(1) Technical constraints of chemical warfare

1) The weather dependency of chemical warfare is the most important constraint. It introduces the element of unpredictability and thus would jeopardize longterm planning. Besides, the downhill impact of this uncertainty might

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27. Brown, op.cit., p.293.

endanger not only the initiator's own side but also the combatants and non-combatants of other friendly countries.

ii) Secondly, this dependence on weather, topography and enemy defence system would require large stocks of chemical weapons. This will adversely affect the quantity of other conventional ammunitions, complicate the command and control procedures and compromise the mobility of forces to a large extent.

iii) Thirdly, the logistic burden of an offensive and defensive capability will also result in the same type of complications. The gas mask and impregnated clothing particularly would add the problem of audio and visual command as well as that of mobility.

iv) Fourthly, the largescale casualty rate (80-90 percent) of living beings would pose the practical problems of treatment and evacuation.

v) As they were vulnerable to surprise air attacks, the Europeans were scared of the problem of civil defence.

vi) Finally, another problem of equal importance was that of decontamination. Decontaminating personnel, equipment and terrain is not only complicated but time consuming too. In addition to the financial burden, a slight defect would mean largescale destruction.

These technical problems dissuaded the military personnel from internalising this inhuman weapon system.

(2) Ethical problems

Another factor that constrained the military from assimilating these weapons was the ethical compulsion. They were unwilling to use this as it killed indiscriminately and as an area weapon it killed both non-combatants and soldiers. The following statement of one CWB officer would show, how much unwilling they were to accept this:

"Gas is insidious; it often causes casualties without any previous warning effects.... Gas exerts a tremendous moral effect, especially upon untrained troops. Uncertainty as to when and where gas is present, and how it will act are demoralising even to troops of high discipline. Nothing breaks a soldier's will to fight so quickly as being gassed, even slightly. His imagination magnifies his real injury a hundred fold".<sup>26</sup>

(3) Specific problems

i) The financial constraints of the economic depression put a check on expansion and innovation in the 1930s.

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26. Lt. Col. A. Prentiss, Jr., "Chemical Support of Infantry", Chemical Warfare Bulletin, 25:4 (October 1939), Brown, p. 153.

ii) The navy was not attracted by this type of weapon because the mobility of the naval ships made it impossible on the part of the enemy to achieve a lethal concentration of gas on any single ship. Besides, once a ship became contaminated the problems of decontamination and evacuation made it an extremely complicated problem. The third constraint was that ship had a fixed capacity of ammunitions to carry. The supply of larger quantities of chemical agents would have curtailed the supply of other relevant conventional weapons.

iii) In the United States the air unit of the defence services could not take the lead in this regard because of the misunderstandings between the War Department and the Air Corps. While the former accorded a supporting and tactical role to the Airpower to strengthen the infantry, the latter considered it as a decisive weapon for the defence of the United States. Caught in the Cobwebs of confusion, the Air corps could not have enough potentiality during the war period to pose any real threat.

iv) Germany too was not prepared to initiate gas warfare. The unpreparedness was caused as the military did not want to invest in a field which was unpopular for its notorcity and inhumaness. Secondly, material shortages brought in production bottlenecks. Shortage of some of the new materials also created problems. Rubber shortage terminated the

production of horse gas masks; casein shortages resulted in the termination of the procurement of light gas clothing; mica shortage prevented the production of gas mask exhaust valves. Even the most important requirement, the chloride of lime, was not available thus throttling the decontamination process.

Leaving aside this backwardness in offensive capability resulting from production bottlenecks, the defence was also not very strong to instill an element of confidence in the military.

v) The only user of chemical weapons during the war, Japan, was in no better position. The absence of any large chemical industry and resource endowments prevented the Japanese to have a good infrastructure to sustain the offensive. Besides, the lack of experience in the First World War and the limited experience against the Chinese did not provide any attraction for the military. Even during the war, there was no proper coordination and planning, materials were scattered preventing effective use on any particular battle front. Civil defence was also in a bad shape.

So, in brief, the technical constraints, production bottlenecks, inhuman characteristics and lack of proper planning, provided the necessary restraints to the military establishments of the belligerents from acquiring the most



heinous chemical weapons of warfare.

(b) Faulty Threat perception

Another factor of great importance was the faulty threat perception of the nations at war. The strict secrecy that surrounded the military preparations prevented the Intelligence Agencies from providing any detailed reports on the level of preparation of the enemy countries. Each country considered the enemy to be more equipped than itself. As a result, there evolved a restraint on initiation, being strengthened by a threat of retaliation. Leaving aside this generality, some of the situational problems added to this fear.

There were a series of authoritative statements threatening the use of chemical agents of warfare in retaliation, which further provided a restraining factor.

On 11 May 1942, Prime Minister Churchill stated,<sup>29</sup>  
"The Soviet Government have expressed to us the view that the Germans, in the desperation of their assault, may make use of poison gas against the armies and people of Russia. We are ourselves firmly resolved not to use this odious weapon unless it is used first by the Germans. Knowing

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29. New York Times, May 11, 1942, p.1.

our Hun, however, we have not neglected to make preparations on a formidable scale..... I wish now to make it plain that we shall treat the unprovoked use of poison gas against our Russian ally exactly as if it were used against ourselves and if we are satisfied that this new outrage has been committed by Hitler, we will use our great and growing air superiority in the West to carry gas warfare on the largest possible scale far and wide against military objectives in Germany". This threat of massive retaliation, in the event of enemy initiation, was subsequently reiterated.

This defensive policy of Britain was mainly conditioned by some reports about the enemy superiority. Thus there were reports that "Britain is seriously open to the threat of sudden attack by a continental power in a degree to which it has not been exposed for hundreds of years".<sup>30</sup> Even the Royal Air Force magnified the German air superiority. Even though, Germany had ratified the Geneva Protocol, this legal restraint could not instill confidence in Britain, as it feared that Hitler might be immune to such niceties of the law.

For the Germans, the threat was more psychological than based on any facts. Germany, constrained by the legal restrictions imposed on it, could not have any major technological breakthrough during this period except that of a nerve gas

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30. Anthony Eden, "Facing the Dictators", p.206, see Brown, p.214.

Tabun. It apprehended that her former enemies must have not only overcome the technological superiority which it enjoyed during the First World War, but must have even surpassed it. Being handicapped by the scarcity of funds, lack of secrecy and military unwillingness, Germany developed a crisis of confidence. Moreover, Germany's central location in Europe imposed restrictions on her; it was considered wise not to invite danger by initiating gas warfare.

The picture was slightly different in case of Japan which led it to have a two phased policy. In the first phase, Japan could not apprehend any danger from the enemies. Unlike the Western powers, it was neither bound by any legal obligation, nor were there any First World War experiences to deter it from using the chemical weapons. On the other hand, Japan belittled the threat from outside. China was taken to be too weak for retaliation. Russia was neglected for its European entanglement. The threat from the United States and Britain was minimised through the Washington Area Conference. Besides, the practical proof of the low key response of the Western powers to its aggression on China during the 1930s made it sufficiently confident to employ mustard gas and teargas against the Chinese at Ichang in October 1941.

But subsequent developments goaded Japan to change its policy of initiation to that of defence. When the United States was apprised of the Japanese attack on China, President

Roosevelt came out with the following policy declaration on June 5, 1942:

"Authoritative reports are reaching this Government of the use by Japan's armed forces in various localities of China of poisonous or noxious agents.... I desire to make it unmistakably clear that, if Japan persists in this inhuman form of warfare against China or against any other of the United Nations, such action will be regarded by this Government as though taken against the United States, and retaliation in kind and in full measure will be meted out..... We shall be prepared to enforce complete retribution. Upon Japan will rest the responsibility".<sup>31</sup>

But when Japan used gas against China, why did not the United States retaliate as threatened earlier? The answer to it would bring out another kind of restraint that prevailed during the war - the demands of the coalition conflagration.

There are some reports that the overestimated intelligence reports of Japanese gas capability, precluded the American to initiation in the early part of the war. But, even after consolidating its position, the United States was not able to

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31. Ltr, Under Sec. State to President, 3 June 1942, quoted in Brown, p.201.

stick to its words. It was because of the following reasons:

i) There was an agreement between China and the United States that even after the Japanese initiation of gas warfare, the decision to retaliate should be taken jointly, with the Chinese government authorizing it. But China was, too, scared to suggest such a retaliation, which might further raise the level of warfare detrimental to the security of China itself.

ii) The second factor that put a restraint on American policy was the need of Great Power unity and the Allies' apprehension of retaliation from the side of Germany in case of American attack on the Japanese.

The CCS agreement of 1942,<sup>32</sup> although allowed for unilateral action, required the consent of either the British or the American to employ gas. Besides, the lack of knowledge about the chemical warfare preparedness of the Soviet Far Eastern Army prevented the American from retaliation. This was made so because the Russians were never the direct participants in the Allied chemical warfare policy formulation.

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32. "In November 1942, the Combined Chiefs of Staff agreed that gas warfare could be undertaken by both United States and British Commonwealth forces on the order of the CCS after approval by appropriate governmental authority, or independently, by any such nation, if in retaliation.....", vide CCS 106/2, 14 November 1942, in Brown, op.cit., p.205.

Thus even if a country is fully prepared for chemical warfare situational problems occasionally might contribute to effective restraints.

Japan too was compelled to shift its policy of initiation to that of refrainment in 1944. This was made possible by a growing fear of retaliation, which was heightened by the publication of an editorial by Hanson Baldwin, a military expert of the New York Times, that the Japanese use had decreased the American public's compunctions to use the toxic agents.

Thus we see that both military unpreparedness and the faulty threat perception, along with the situational problems, did a wonderful job in restraining the use of chemical weapons during the Second World War.

**CHAPTER FOUR**

**CHEMICAL WEAPON RESTRAINT SYSTEM -**

**A VISCERA**

**(PART TWO)**

The use of atomic weapons by the United States against Japan brought an end both to the Second World War and to the possibility, if any, of the use of chemical weapons. The discovery of this weapon and its subsequent vertical and horizontal proliferation kept the powers so much engrossed that the issue of chemical warfare was put aside for some time. The nuclear threat overshadowed the chemical. And opinions were expressed that with the entry of this new member, the military arsenals would no more require the assistance of the most abhorrent weapon system of the world - chemical and biological. But this was a gimmick played by those who wanted a clandestine continuance of CBW. In fact, the world is not free from the dangers of CBW, as is proved by the following developments:

1) Allegations have been made, of the use of chemical weapons, in most of the post-Second World War battles since the Second World War, some of which are widely believed to be true and even confirmed by the powers concerned. The following instances may be cited: the Chinese Civil War, the War of National Liberation in Indo-China, the Korean War, Cuba against the Guerrillas, the French against Algerian insurgents, the French and Spanish colonial forces against the Spanish Colony of Rhodocoro, the Egyptian forces during their intervention in the Yemeni Civil War, Portugal against



the rebels in Guinea-Bissau, Israel against the Palestinians. The problem is that this extensive use of chemical weapons would weaken many of the psychological, institutional and technical constraints which have been effective in the past.

2) The main threat of erosion of existing constraints appears to lie in the increased attention that has been paid to the "non-lethal" chemical weapons.<sup>1</sup> The problem assumes greater importance when we see that some states make insistent attempts to present these weapons as being outside the concept of CBW, by making a restrictive interpretation of the Geneva Protocol.

"Thus, the U.S. delegate maintained before the First Committee of the U.N. General Assembly that the Protocol does not apply to all gases, and it certainly does not prohibit the use of simple teargas..... It is unreasonable to contend that any rule of International Law prohibits the use in military combat against an enemy of non-toxic chemical agents that governments around the world commonly use to control riots by their own peoples".<sup>2</sup> Britain, Australia and Portugal have also contended for such a restrictive interpretation of the Protocol, to facilitate the use of non-lethal weapons,

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1. "The Prevention of CBW", volume V of "Problem of Chemical and Biological Warfare", SIPRI, 1971, p.32.

2. U.N. Document A/C.1/PV. 1452, pp.57-8.

particularly the incapacitants. The alarming consequence of this development is that the non-lethal weapons might turn out to be lethal when the doses and concentrations are increased and their use may pave the way for the subsequent use of lethal weapons, too.

3) Another dangerous development is that the post-Second World War advances in CBW technology have increased the military attractions of the weapons. "In the field of chemical weapons, the late 70s have seen the development of Binary Agents".<sup>3</sup> "A binary chemical weapon is a device filled with two chemicals of low toxicity which mix when the munition is delivered to the target. The reaction produces a lethal nerve gas".<sup>4</sup> This development eases problems of storage, accidents and disposal which were found in earlier weapons.<sup>5</sup> The development of binary weapons would also greatly complicate the verification of a CW Treaty because they would use chemicals also needed in large quantities for peaceful purposes.<sup>6</sup> In addition to the already existing nerve gases, the discovery of binary weapons would entice the military establishments toward a chemical arms race.

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3. "CB Weapons", Frontier, 13(36), May 2, 1981, p.6.

4. Frank Barnaby, "CBW - An Unresolved Terror", Bulletin of Atomic Scientists, 36(6), June 1980, p.10.

5. Frontier, op.cit., p.6.

6. Barnaby, op.cit., p.10.

Thus it is clear that chemical weapons continue to exist and pose to be even far more dangerous than they were in the past. But to answer the question, whether any type of restraint system is working today or not, we have to check up the three important parameters of the past restraint system in the light of the present developments. The three parameters are as follows: (a) threat of retaliation, (b) military unpreparedness, and (c) legal constraint.

(a) The first parameter can better be investigated by dividing the international system into probable combatant groups. Taking cue from the level of weaponry available, the international system can be divided into the following groups:

- i. Non-Nuclear (Weaker) vs Non-Nuclear (Weaker)
- ii. Non-Nuclear (Stronger) vs Non-Nuclear (Weaker)
- iii. Non-Nuclear (Stronger) vs Non-Nuclear (Stronger)
- iv. Nuclear (Stronger) vs Nuclear (Stronger)
- v. Nuclear (Stronger) vs Non-Nuclear (Stronger)
- vi. Nuclear (Stronger) vs Non-Nuclear (Weaker)

This type of categorisation is possible, when we take certain propositions into account; nuclear weapons have brought about a tremendous change in the power positions of the countries; nuclear powers have also been equipped with

chemical warfare capability; most of the non-nuclear (stronger) States have chemical warfare capability; lastly, non-nuclear (weaker) States though not technologically weak enough to have this capability are devoid of this, because of the complex mechanism of chemical weapon system, and the financial difficulties involved in the process.

The degree of the retaliation constraint would be more in case of categories number (iii), (iv) and (v). But it could be weak in situations involving categories (ii) and (vi). In the light of the present propositions, the first category won't come into the picture, unless either of the parties is backed by any of the chemical powers. There can be no dispute over the first generalisation because deterrence would best work in the type of situations where both the parties are equally powerful. Similarly, the second generalisation can be vindicated when we see that the relationship is mostly of 'downhill' type here - one party becoming stronger over the other, either because of the nuclear weapons at its hand or the chemical weapons.

But there is a unique situation (not given in the above list), in which chemical weapons have been largely used, particularly since 1945. This is either a civil war type of situation or a war for national liberation by the guerrillas. The list of allegations referred to in Chapter-I

and at the beginning of the present one amply supports this generalisation. Chemical weapons, in these cases, have proved to be militarily more effective to drive the guerrillas out of their caves or hideouts under dense vegetation. This success has also affected in another way by slackening the restraint arising out of military non-assimilation of chemical weapons.

(b) Given the secrecy that surrounds the chemical warfare policies of the powers, it would be difficult to test the level of military preparedness for chemical warfare. But since R & D and manufacture of chemical weapons have not been banned by the Geneva Protocol and the right to retaliation exists, it is very obvious that defensive preparations must be continuing. Besides, taking into account the increasing number of allegations of the use of such weapons and the corresponding drive for sophistication in the weapon system, one can assume out that the level of preparedness must be better in those countries that have chemical warfare capability.

(c) The allegations of the use of such weapons have led to the approval of many resolutions by the United States which, in turn, have strengthened the legal constraints on the chemical weapon system. The U.N. Secretary General's report on CBW and the effects of their possible use and a

WHO report on the health aspects of CBW stimulated and helped the debate along.<sup>7</sup>

The most important harbinger of a new supplementary legal constraint was the resolution of 2162 B(KXI) adopted by the U.N. General Assembly on 5 December 1966.<sup>8</sup> Prompted by the use of irritant-agent weapons and herbicides in Vietnam, the first draft for this resolution was submitted by Hungary. This resolution:

- i. calls for strict observance by all States of the principles and objectives of the Protocol for the prohibition of the use in war of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of warfare signed at Geneva on 17 June 1925, and condemns all actions contrary to those objectives; and
- ii. invites all States to accede to the Geneva Protocol of 17 June 1925.

Since this resolution expressed its faith in the Protocol in general terms and did not open up the issue of its interpretation, even the United States and Japan which at that time had not acceded to the Protocol, voted in favour.

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7. "CB Disarmament Negotiations, 1920-70", volume IV of "Problem of Chemical & Biological Warfare", SIPRI, 1971, p.307.

8. See Appendix 4.

Interestingly, none opposed the resolution, there were four abstentions.

But "the most important evidence regarding the interpretations of the Geneva Protocol by the parties to it is provided by the vote on U.N. resolution 2603 A (XXIV) which affirmed the absolutely comprehensive character of the prohibition enunciated in the Protocol".<sup>9</sup> Eighty States voted for this and the United States, Australia and Portugal went against it. The striking point is the number of abstainers - thirty six. The objection of the abstainers was based on procedural issue, "in particular as regards the competence of the U.N. General Assembly to interpret International Documents through resolutions. However, this resolution succeeded in demonstrating the strength of support for an extensive interpretation of the law".<sup>10</sup>

Subsequently, in order to rectify the omissions and commissions of the Geneva Protocol, an attempt was made by Malta at the 22nd U.N. General Assembly to initiate a revision, updating or replacement of the Geneva Protocol by another instrument. But it was objected that such a

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9. "CBW and the Law of War", SIPRI, vol.3 of "Problem of Chemical & Biological Warfare", 1971, p.64.

10. SIPRI, vol.V, op.cit., p.63.

move would mean that the binding character of the Protocol was in doubt and that States now parties to it are not necessarily bound in respect of irritant agents and herbicides.<sup>11</sup>

It is a good thing that "in accordance with an agreement reached in 1974, the USA and the USSR are engaged in negotiations to prepare a joint initiative with respect to the conclusion of an International Convention dealing with means of chemical warfare".<sup>12</sup> And it was on 7 August 1979, that the two powers formally transmitted to the Committee on Disarmament (CD) a joint report on progress in these negotiations.<sup>13</sup> Following are some of the important agreements hitherto reached:<sup>14</sup>

- a) The CW ban will be comprehensive;
- b) The substances banned will be defined on the basis of a general purpose criterion, supplemented chiefly by the criteria of toxicity;
- c) Means for chemical warfare as well as means of their production will have to be declared immediately after a state becomes a party to the convention, and destroyed or dismantled within 10 years;

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11. Ibid., p.63.

12. "SIPRI Year Book of World Armaments and Disarmament", 1980, p.365.

13. See Appendix 7.

14. SIPRI Year Book, 1980, op.cit., pp.369-70.



- d) An International Consultative Committee, with a permanent secretariat, will be set up for verification purposes;
- e) Onsite inspection "by challenge" could be carried out in certain cases.

As was noted at the 26th CPSU Congress, the negotiations were proceeding at an intolerably slow pace.<sup>15</sup> In 1980 the United States suspended these negotiations altogether, and it seems that until SALT-II is ratified, Washington is not going to resume them. In addition to this, there are some other developments, that would show - how gloomy is the future of chemical disarmament.

1) The CW items in President Carter's final defence budget were based on a 5-year forward spending requirements of \$24,770 million. Within six weeks of taking office, President Reagan's Administration almost trebled this figure, the key decision being to go ahead on the weaponry as well as the protection side - meaning that by Spring 1984, the U.S. should once again be ready to mass-produce lethal CW munitions.<sup>16</sup>

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15. Vladimir Petrovsky, "Mass Destruction Weapons - Who opposes their prohibition", New Times (39), September 1981, pp.5-7.

16. J.P. Perry Robinson, "Chemical Weapons and Europe", Survival, vol.XXIV, No.1, Jan-Feb. 1982, p.9.

2) In the 5 year force goals adopted in 1976, NATO recorded consensus on the need for greater preparedness for CW in the form of improved antichemical protection.

3) The Soviet Union has levelled serious charges against certain countries: "In Britain in May 1980, troop exercises were held with the use of chemical agents. The U.S. supplies chemical weapons to mercenary gangs sent into Afghanistan. US made chemical bombs are dropped on the guerrillas and civilians by the US-backed junta in El Salvador".<sup>17</sup>

4) More disturbing are reports of Vietnam using captured American stocks of chemical weapons in Kampuchea and Laos. This was obliquely confirmed by the Vietnamese themselves in mid-80 when an official broadcast mentioned the improvement in the performance of the Vietnamese army's CW troops.<sup>18</sup>

5) In a 32 page report to the Congress, the American Secretary of State, General Haig accused the Soviet Union of having used toxins and other chemical warfare agents which had killed over 10,000 people in Laos, Kampuchea and Afghanistan in the past 7 years.<sup>19</sup>

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17. New Times, op.cit., p.6.

18. Frontier, op.cit., p.6.

19. The Statesman (Delhi), 24 March 1982.

This evidence of resurgent interest in chemical warfare can scarcely fail to affect other countries, and thus underlines the importance of a strong restraint system, in the present context.

#### PROBLEMS OF CHEMICAL DISARMAMENT

According to provisions of the 1972 Biological Disarmament Convention, "the parties are committed to negotiating an agreement on effective measures for the prohibition of the development, production and stockpiling of chemical weapons and for their destruction, as well as on appropriate measures concerning equipment and means of delivery specifically designed for the production or use of chemical agents for weapons purposes".<sup>20</sup> Although discussions are going on, both inside and outside the United Nations, there has not been any remarkable progress so far. A number of factors prevent the early conclusion of an all comprehensive fool-proof treaty that would solve the problem of Chemical Disarmament. The following problems pose serious obstacles:

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20. "Chemical Disarmament: Some Problems of Verification", SIPRI, 1973, p.9.

### 1. Problem of Horizontal Proliferation

The problem, unique to this field, is that the basic raw materials and the technological know-how required to manufacture the chemical agents of warfare are not beyond the reach of the poor countries. The existing laboratories for the manufacture of medicines and pesticides or insecticides would serve the purpose of a chemical weapon factory. So the problem of putting an end to such a weapon system is really gigantic and no country would like to give up the retaliatory capability unless foolproof control is ensured, which would solely depend on an effective verification system.

### 2. The Attractions of Chemical Weapons as a Stimulant for Proliferation

Unlike biological weapons, chemical weapons are proved to be militarily more useful. The type of military restraint which was thought to be present before the Vietnam War, is no more in existence. The use of gas in Vietnam by the United States military has not only proved the efficacy of these weapons but has also opened the false veil of abhorrence towards chemical weapons that surrounded the military circles all over the world. The attraction of chemical weapons since their largescale use in Vietnam would obviously result in

their clandestine possession, thus making the task of verification more difficult.

#### HUMANITY AGREEMENT

It has been contended that chemical weapons are the most humane of all the weapons available in the military arsenals, and thus efforts should not be made to remove this humane element from the barbarity of war. The Germans were the first to put forward this argument to defend their use of chemical agents during the First World War. Similar arguments were put forward in the 1920s, by spokesmen of chemical industries in the United States and Britain to strengthen their publicity campaigns for securing protective tariffs. Then came the advocates in the United States who used the argument in their efforts to make the American Army Chemical Warfare Service (CWS), an independent technical service. Later on, in the late 50s, the American Army CWS, which was renamed as Chemical Corps, made wide publicity of the humanity argument to make sure that chemical weapons get a larger budgetary allocation. It was during this time that a doctrinal change in the U.S. nuclear policy from "massive retaliation" to "flexible response" helped the protagonists of the humanity argument. "And a case could be made that, in the absence of a first-use prohibition, CB weapons were

suites to this new doctrine".<sup>21</sup> Consequently, "the appropriations for the chemical corps were quintupled over a five-year period and manufacturing programmes for CBW material were expanded, resulting in an accumulation of a massive stockpile of a new type of nerve gas (VX)".<sup>22</sup>

Very recently, when questioned about its use of irritant chemicals such as CS in Indo-China, the US fell back upon this easiest explanation to argue that it saved the lives of non-combatants.

If we sum up the gist of the humanity argument would be as follows:

- i) First, chemical weapons are less inhuman than other weapons because they can be militarily more effective without killing large numbers of people;
- ii) Secondly, in comparison with other weapons, gas casualties suffered less from their injuries as regards both immediate effects and chronic after effects; and
- iii) Thirdly, the development of some 'psychochemicals' has tried to make this point very strong. According to the adherents of this point, chemical weapons would not only satisfy the above two points, but

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21. SIPRI, vol.V, op.cit., p.127.

22. Ibid., pp.127-28.

if used properly, would eliminate both death and injury from the dictionaries of war. This can be made possible by the future development of any gas that might put the enemies in deep alumber or incapacitate them for a considerable time, till the purpose is solved.

If this is the case, then the elimination of chemical weapons from the armoury would naturally diminish the possibilities for relatively humanitarian conduct in war. But before jumping to such a sweeping conclusion, we have to take into account the quantum of truth embedded in the humanitarian argument. This would necessitate an analysis of the different kinds of chemical weapons in the light of different situations in which they are supposed to be used.

As has already been pointed out in Chapter-II, the chemical weapon system can broadly be divided into three categories - lethal, irritating and incapacitating.

Coming to the first type, we find that the humanitarian debate of the First World War period was mainly substantiated by the casualty statistics, which were published in the various official histories of the war. The figures for the British Expeditionary Force "disclose an overall mortality rate among gas casualties of around 2 percent,

as compared with 20 to 30 percent for other types of battle casualty".<sup>23</sup> But it should be kept in mind that the main lethal chemical weapon of that time was mustard gas which, if compared with that of the present day nerve gases, would almost come down to the level of incapacitating agents. "Today, nerve-gas weapons are expected to produce mortality rates of between 25 and 75 percent among their casualties and they would probably only be used in preference to other weapons when they could be expected to produce higher casualty rates".<sup>24</sup> Besides, as regards the long-term injury a recent discovery has brought out that mustard gas could cause blindness decades after its initial effects on the eye healed.<sup>25</sup> Similarly, the argument that chemical weapons decrease non-combatant deaths is based on a fallacy. The very fact that chemical weapons are weather dependent, thus making the target area both unlimited and uncertain, exposes this fallacy. Besides, non-combatants are even less likely to be well protected against chemical weapons than against other weapons.

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23. Ibid., p.125.

24. D. Lindsey, "Selective Malfunctioning of the Human Machine: New Horizons in Chemical Warfare", *Military Medicine* 125 : 598-605, 1960, vide SIPRI, vol.V, op.cit., pp.1301-31.

25. SIPRI, vol.V, op.cit., p.131.



Coming to the non-lethal irritant and incapacitating weapons, the naivety of the humanity argument becomes prominent. "Once introduced into a combat area, the pressure would be very great to utilize them in any manner that increased the overall effectiveness of general military operations".<sup>26</sup> Even though non-lethal by definition, they can be used to supplement the lethal ones. This has happened in Vietnam where the use of riot gases by the Americans forced the guerrillas to come out of their protective cover to face attack by fragmentation bombs.<sup>27</sup>

Summing up all these, it can be said that the humanitarian argument does not hold both in the context of the present day weapon system as well as in the manner in which they have been used in the past.

#### SCOPE OF THE PROHIBITIONS

The most important point of all Disarmament Conventions is the scope of the prohibitions - the definition of the agents that are to be prohibited and the manner and extent to which they would be subjected to prohibitions. This

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26. M. Meselson, "Ethical Problems: Preventing CBW", in "CBW-London Conference on CBW", ed. by Steven Rose, 1969, p.166.

27. Steven Rose, op.cit., p.166.

task becomes simple in cases where there is no duality of uses - civilian and military. But in case of chemical weapons, the problem is striking. The issues that are often debated are as follows: (i) definition of agents, (ii) activities to be prohibited - partial or comprehensive ban, and (iii) chemical and biological weapons - a joint or a separate treatment.

#### (1) Definition of Agents

The U.N. Secretary General's report of 1969 defines chemical agents of warfare as "chemical substances, whether gaseous, liquid or solid, which might be employed because of their direct toxic effects on man, animals and plants".<sup>28</sup> This definition is comprehensive enough to include that of the 1925 Geneva Protocol which prohibited the "use of asphyxiating, poisonous or other gases and of all analogous liquids, materials or devices".<sup>29</sup> One thing that is clear from this definition is that chemical substances used for conventional weapons, such as explosives, smoke and incendiaries which exert their primary effects through physical force, fire, air deprivation or reduced visibility, as well as fuel, are not to be treated as chemical agents of warfare.<sup>30</sup>

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28. U.N. Secretary General's Report, op.cit., p.5.

29. Geneva Protocol, Appendix 2.

30. SIPRI Year Book of World Armaments and Disarmament, 1972, p.386.

But the problem arises when it is required to determine whether a particular chemical substance should be classified as a chemical agent of warfare or not. It is here that the above definition fails to provide any answer. Attempts to devise a comprehensive definition have resulted in failures, because chemical agents have been variously categorised by various considerations.

On the basis of one criterion, "chemical agents can be grouped into three categories: single-purpose agents which have no use other than for warfare; dual-purpose agents which are commonly used for civilian needs, but which can also be used in war; and intermediates which may or may not have civilian applications and which do not have immediate military significance unless converted into agents"<sup>31</sup> For example, phosgene and hydrogen cyanide are also used on a largescale as industrial inputs. Similarly, apparatus like teargas grenades and crop-spraying systems in aircraft filled with herbicides, are also used for police and for agricultural purposes. Thus the production and stockpile of these weapons and apparatus can only be limited but not prohibited; complete prohibition would impair civilian uses.

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31. Ibid., p.384.

According to another criterion - the degree of toxicity - chemical agents of warfare can be divided into two groups: supertoxic those whose toxic effects are achieved in minimum concentrations and those whose toxic effects are achieved through high concentrations. The advantage which accrues from this is that even the chemical substances that are to be discovered in the future can be covered according to this toxicity criterion. But the problem is that in the absence of an internationally accepted laboratory method of determining the toxicity threshold, this criterion cannot be foolproof. Besides, it has also to take into account some other important properties of the chemical substances namely, storage stability, stability during and after dissemination and ease of dissemination.

General structural formulae provide another basis on which known classes of supertoxic compounds, such as nerve agents, might be identified. "The listing of warfare agents, including specific structural formulae, may be helpful, but given military secrecy, it would not be possible to cover all agents accumulated by states".<sup>32</sup> Nevertheless, no formulae can cover all the compounds that may be discovered in the future.

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32. Ibid., pp.385-86.

There are some who plead for a 'purpose criterion', which was used in the biological disarmament convention. According to this criterion, reference to qualitative characteristics and to quantitative factors may indicate the purpose and thus enable their classification. But the problem again is with the binary or dual purpose agents. These agents can be produced for civilian use, but "a change of intention on the part of the producing States, which is clearly unverifiable, would be enough to consider civilian stockpiles as military stockpiles".<sup>33</sup>

If taken separately, none of the above criteria would be sufficient for a chemical disarmament convention. So, for practical purposes, a combination of all these has to be taken.

(ii) Activities to be Prohibited:  
Partial or Comprehensive

Before any treaty banning the chemical weapon comes into force, it is quite natural that a debate should take place on the activities to be prohibited under that treaty. But this depends both on the nature of the weapon as well as the situation in which it is being banned. There are broadly two types of prohibitions - partial and comprehensive.

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33. Ibid., p.366.

A comprehensive list would include a ban on R & D, production, testing, international trade, possession or stockpile, training and use both of the agents and appliances of chemical warfare. Considering the characteristics of the chemical weapons and the politics that surrounds it, such an approach might sound idealistic. Under a partial ban, the item that is given priority is a ban on the production and stockpiling of single-purpose agents. But such an agreement will not solve the problem. Similarly, a built-in inequality of obligations under a partial agreement that did not provide for the elimination of existing stockpiles may be considered discriminatory in that it would strengthen the monopolistic positions of the great powers.

(iii) Chemical and Biological Weapons:  
A joint or separate treatment?

"The question of according priority to chemical or bacteriological weapons was a difficult and complicated one".<sup>34</sup> The arguments generally put forward against a separate treatment of biological weapons are as follows:

1) The adoption of a treaty dealing with biological weapons only would be less comprehensive and militarily less meaningful measure than a treaty prohibiting both chemical and biological weapons. Biological weapons have

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34. Ashwani K. Chopra, "India's Policy towards Chemical & Bacteriological (Biological) Weapons", Pakistan Horizon, The Pakistan Institute of International Quarterly, vol. XXXIV, No. 4, 1981, pp. 36-47.

already been renounced unilaterally by the United States - the one power which is known for certain to have had an offensive BW programme.<sup>35</sup>

2) It would split a category of weapons in respect of which there has been a common abhorrence and a single body of law. This was evident from the draft treaties on general and complete Disarmament submitted by the United States and the Soviet Union. The relevant resolutions of the U.N. General Assembly and the U.N. Secretary General's report dealt with both weapons together. The latter report says: "All biological processes depend upon chemical or physico-chemical reactions and what may be regarded today as a biological agent could tomorrow be treated as a chemical one".<sup>36</sup>

3) "Weapons of both categories could be delivered practically by the same vehicles. Indeed in the armed forces of many countries, the same services dealt with both of them".<sup>37</sup>

4) According to the Indian representative Mr. Asim Hussain, singling out biological weapons for abolition, while permitting the continued production and possession of chemical weapons, "would intensify the chemical weapons

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35. "The Prevention of CBW," SIPRI, vol.V, op.cit., p.121.

36. U.N. Document A/7575, para 10.

37. Pakistan Horizon, op.cit., p.41.

arms race and would seem to legitimise it".<sup>38</sup>

However, this problem was resolved when a link was preserved between the two categories of weapons, and a Convention on Biological weapons came into being in 1972. Accordingly, the parties to this convention committed themselves to work actively for concluding agreement on the elimination of chemical weapons.

(iv) Problem of Verification

Even if the first two problems are resolved and it is accepted that a comprehensive ban should be imposed on the chemical weapons, there remains another problem which assumes much importance because of the technicalities involved in the issue. It might be easy to take a decision to destroy all the existing stockpiles, put a fullstop on the future manufacture and if possible to convert the chemical agents of warfare to some substances which will have civilian utility. But what is the guarantee that the declared quantum of stockpiles is not without any mischievous intentions? How can one be assured that all the existing stockpiles are completely destroyed or converted to peaceful use? In other words, it is verification that poses the biggest hurdle in the way of chemical disarmament. This is a

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38. ENDC/PV 429, 19 August 1969, p.12, para 22.



problem that is important both to the developing as well as the developed countries of the world. Since a chemical weapon capability is considered as "poor man's deterrent" the smaller powers will not give up so easily such a valuable possession, without any strong confidence building measures (CBMs). Similarly, since the sophistication in the weapon system as well as the tactical application of it gives a good leverage to the big powers, they too will not give in so easily to the pressures to achieve chemical disarmament. But what is the problem in having a verification system to guard against the suspicion of cheating?

The stages, through which a chemical warfare offensive capability is developed, are very complex. So, naturally, the activities to be controlled are numerous, which can be seen from the following list:<sup>39</sup>

- a) The elimination of research specifically directed towards the discovery of new CB agents;
- b) The dissemination of information on new chemical compounds which might have potential CW applications, discovered as a result of research and/or development originally directed towards other purposes;

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39. "Chemical Disarmament: Some Problems of Verification", A SIPRI Monograph, 1973, pp. 19-20.

- c) The closure, elimination and/or conversion to civilian purposes of research facilities dedicated to the development of agent production processes, chemical munitions and delivery systems;
- d) The closure of facilities and the elimination of activities associated with the testing of agents, munitions and delivery systems;
- e) The closure, destruction and/or conversion to civilian purposes of all singlepurpose chemical agent and munition production facilities and the non-production of all singlepurpose agents;
- f) The production of all dualpurpose agents and of relevant CW agent intermediates;
- g) The transportation of all single and dual purpose agents, relevant production, intermediates, munitions and countermeasure devices and equipment;
- h) The identification and destruction of chemical agent and munition stockpiles including, as a first stage, assuming responsibility for all storage facilities accounting for stocks until such stocks are destroyed and, by accounting for all prior production and consumption, ensuring that the stockpiles destroyed are in fact total stocks;
- i) The closure, elimination and/or conversion to civilian purposes of facilities involved in CW countermeasure research, development and production;

- j) The destruction of all stockpiles of devices specifically intended for CW countermeasure purposes (such as masks, protective suits and equipment, alarms and so on) including, as a first stage, assuming responsibility for all storage facilities and accounting for all stocks until such stocks are destroyed;
- k) The elimination and the prevention of the formation of all civilian and/or military units which have functions associated with either offensive or defensive CW activity.

Mainly five methods have been suggested for verification: administrative and budgetary inspection, literature surveillance, remote observation, economic analysis, and visiting inspection teams. And the sources through which informations flow are mainly two: open (press, radio, parliamentary and official reports, reports in scientific and specialised journals, gossip, tourists and travelling specialists) and secret (espionage, radio monitoring and aerial or satellite surveillance or other forms of remote observation).

But these methods are also not without any fault. Even where CW is mentioned in a budget, separate figures may not be given. For example, in British expenditure estimates the provisions for chemical and biological defence

R & D are lumped together with R & D into ordnance, military ground vehicles and Royal Engineer Stores".<sup>40</sup> Similarly, literature surveillance cannot be fully relied upon, as in most countries censorship exists on literature that might have military relevance. Although this has some relevance now, after a disarmament treaty comes into force - the credibility of this method would be more doubtful. The third method - inspection - is also fraught with some practical problems. The smallness of a chemical plant poses a great problem to the Inspectors, as it might be scattered all over the country. "It is one thing to identify the function of a plant by on-site inspection; but it is quite another to detect suitable plants for inspection in the first place".<sup>41</sup> Besides, countries might express fears that an inspection system will give rise to commercial espionage or military espionage. It is often argued that the experts might use the information which they gain during the inspection to help the development of an offensive capability in the countries they hail from.

But this should not create an impression that, given the nature of the chemical weapon system, verification is impossible and thus no agreement can be reached. In fact, the study of the reports submitted in the CCD by experts

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40. "The Prevention of CBN", SIPRI, vol.V, op.cit., p.144.

41. Ibid., p.174.

of different countries warrant a measure of optimism. For example, there are several ways in which a testing ground might be detected.<sup>42</sup>

1. Local reports and rumors;
2. Reports of accidents;
3. Reconnaissance from aircrafts or satellites. Large isolated areas with buildings, access roads, test equipment and animals, sometimes tethered in a pattern to be subjected to test, may be detectable. Since infra-red photography from satellites can detect atmospheric pollution, it is always possible that it might be used to detect aerosol clouds at testing grounds. Raman spectroscopy using laser light might even provide possibilities for long-distance chemical analysis;
4. Remote sensors at ground level, might be used to detect particles released in tests;
5. The degree of toxicity of the chemical products can be estimated by studying the security measures adopted at the plant. Unlike the case of the production of organophosphorus substances for pesticides or insecticides, strong security measures

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42. Ibid., pp.180-1.

are taken in the factories producing warfare agents. Even the techniques of gasliquid chromatography, optical and nuclear spectroscopy can be useful to detect the suspect compounds by chemically analysing the waste waters, waste gases and soil around the plant building;

6. In carrying out the verification of dualpurpose products, statistical accounting of their production and consumption can be used. For example, "the consumption of phosgene can be controlled by an analysis of the figures for the production of products for which phosgene is the basic raw material, such as polymers, herbicides, insecticides, dyes, medical preparations and so on".<sup>43</sup>

Thus technical problems should not be a stumbling block to achieve chemical disarmament. If, through researches deadliest weapons could be found, why can't there be new means to effectively destroy these weapons? Besides, verification need not be 100 percent efficient. "What is required is a sufficiently high probability of detection to provide deterrence on one side and reassurance on the other".<sup>44</sup>

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43. "Chemical Disarmament: Some Problems of Verification", op.cit., pp.24-5.

44. "The Prevention of CBW", SIPRI, vol.V, op.cit., p.189.

## CONCLUSION

The arms race continues. Along with it, continue the efforts to eliminate them. But the most disturbing part of this arms race is the increasing attention on the Weapons of Mass Destruction. Of the three types of WMD, chemical weapons came first, and they continue to be present till today also. The question of eliminating these weapons from the military arsenals has been on the agenda for quite a long time. But no tangible progress has so far been achieved. An insight into the problems clearly shows that it is mainly a politico-techni-mix. No formal legal instrument can completely restrain the chemical weapons unless there is a genuine will to that effect. Some measures can be taken to facilitate progress towards chemical disarmament.

a) Over the years, there has been an increase in the number of countries which have acceded to or ratified the Geneva Protocol. This not only universalises but strengthens a fairly old prohibition on chemical weapons. It is important that this trend should continue.

b) It is, however, a matter of regret that most of the major powers make reservations before ratifying or acceding to the Protocol. This limits the scope of the prohibition contained in it to a simple no-first-use declaration. As a first step in the direction of total



prohibition these clauses should be dispensed with.

c) In view of the delays and difficulties involved in achieving superpower agreement on a chemical convention, some scholars have suggested that other countries should take initiative in forming chemical-weapon-freezones, in the light of the Tlatelco Treaty,<sup>1</sup> for a nuclear-weapon-freezone in Latin America.

d) A Plea for Scientific Ethics: The most important of all is the responsibility of the scientists who are associated with the manufacture of Weapons of Mass Destruction. Treaties can be concluded to ban the manufacture or use of any particular type of weapon. But in the event of any sudden change, treaties can be abrogated, breaking the restraint system. This has been amply proved from past experiences. Similarly, in the event of any new invention the legal obligation will not be useful. Do the inventors have a role to play in providing a solution to the problem?

"Science may be neutral and moral but scientists are not".<sup>2</sup> There is no doubt on the point that it is the science that has been instrumental in the transformation of the whole

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1. For details, see G.K. Vachon, "Chemical Disarmament - A regional initiative", Millenium, Journal of International Studies, London School of Economics, 8(2), Autumn 1979, pp.145-54.
  2. William Epstein, "Arms Race and the Role of Science", International Herald Tribune, 20 February 1976.

material basis of our civilisation and surely it is a process to which there is no limit. "But our powers have now reached the point where we are presented with the familiar dilemma where we have on the one hand the possibility of an indefinite extension of human well-being and, on the other, the growing danger of a fearful catastrophe".<sup>3</sup>

Although politicians and officials in Governments take decisions, scientists cannot escape their responsibility. They have a moral duty to use their capabilities to ensure that technology does not curse but helps the mankind. "British scientist Faraday had refused to produce poison gas because of its implications, and Leonardo da Vinci, for the same reason, discontinued his study of building submarines".<sup>4</sup>

Regrettably, scientists have forgotten this moral responsibility. As a result, the world has witnessed an unending competition among the powers to acquire more and more sophisticated weapons of Mass Destruction. It is a pity that even today there exists a serious credibility

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3. G.F. Powell, "Scientific Responsibility", CBW: London Conference on CBW, ed. by Steven Rose, p.18.

4. K.N. Pandey, "Arms Race and Scientists' Responsibility", Tribune (Chandigarh), 18 September 1976.

gap among the scientists. For example, a few years ago a group of scientists warned that fluorocarbons, the chemicals used in aerosol sprays and refrigeration could cause a serious depletion of ozone in the upper atmosphere and could lead to climatic change and an increase in skin cancer from solar radiation. But, surprisingly, this was negated by another group of scientists. Scientists should establish, both nationally and internationally, a code of conduct and unite in their efforts not to engage in developing new means of mass annihilation.

Scientists' organisations have been in the forefront of attempts to educate the public and influence governments on the dangers of modern armaments and the need for disarmament.<sup>5</sup> The Pugwash Movement is a torch bearer in this field.

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5. Bernard F. Feld & Victor F. Weisskopf, "Must Scientist be blamed for Mounting Armaments?", The Times of India (New Delhi), 24 September 1976.

**APPENDICES**

APPENDIX 1

EARLY TREATIES AND DRAFT TREATIES  
RELATED TO CBW

DECLARATION OF ST. PETERSBURG OF 1868 TO  
THE EFFECT OF PROHIBITING THE USE OF CERTAIN  
PROJECTILES IN WARTIME, SIGNED AT ST. PETERSBURG,  
29 NOVEMBER - 11 DECEMBER 1868

...

Considering: That the progress of civilisation should have  
the effect of alleviating as much as possible the calamities  
of war;

That the sole legitimate end which the States ought  
to consider during war is the weakening of the military  
forces of the enemy;

That for the attainment of this it is sufficient to  
disable the greatest possible number of men;

That this end would be exceeded by the employment  
of arms which uselessly aggravate the sufferings of disabled  
men, or render their death inevitable;

That the employment of such arms would therefore be  
contrary to the laws of humanity;

The contracting Parties engage mutually to renounce,  
in case of war among themselves, the employment by their  
military or naval troops of any projectile of a weight below  
400 grammes, which is either explosive or charged with  
fulminating or inflammable substances.

...

BRUSSELS CONFERENCE OF 1874  
INTERNATIONAL DECLARATION CONCERNING THE  
LAWS AND CUSTOMS OF WAR, SIGNED AT  
BRUSSELS, 27 AUGUST 1874

...

Article XII

The laws of war do not recognize in belligerents an unlimited power in the adoption of means of injuring the enemy.

Article XIII

According to this principle are especially forbidden:

(a) Employment of poison or poisoned weapons;

...

(e) The employment of arms, projectiles or material calculated to cause superfluous injury, as well as the use of projectiles prohibited by the Declaration of St. Petersburg of 1868.

...

FIRST INTERNATIONAL PEACE CONFERENCE,  
THE HAGUE, 1899, ACTS SIGNED AT THE  
HAGUE, 29 JULY 1899  
ANNEX TO THE CONVENTION

Regulations respecting the laws and customs  
of war on land

...

Article XXII

The right of belligerents to adopt means of injuring the enemy is not unlimited.

Article XXIII

In addition to the prohibitions provided by special conventions, it is especially forbidden:

- (a) To employ poison or poisoned weapons;
- (b) To kill or wound treacherously individuals belonging  
... to the hostile nation or army;
- (c) To employ arms, projectiles, or material calculated  
... to cause unnecessary suffering;

Declaration

The Undersigned, Plenipotentiaries of the Powers represented at the International Peace Conference at the Hague, duly authorized to that effect by their Governments,

Inspired by the sentiments which found expression in the Declaration of St. Petersburg of the 29th November (11th December), 1868,

Declare as follows:

The Contracting Powers agree to abstain from the use of projectiles the object of which is the diffusion of asphyxiating or deleterious gases.

SECOND INTERNATIONAL PEACE CONFERENCE  
THE HAGUE, 1907, ACTS SIGNED AT THE HAGUE,  
18 OCTOBER 1907  
ANNEX TO THE CONVENTION

Regulations respecting the Laws and  
Customs of War on Land

Article XXII

The right of belligerents to adopt means of injuring the enemy is not unlimited.

Article XXIII

In addition to the prohibitions provided by special conventions, it is especially forbidden:

- (a) To employ poison or poisoned weapons;
- (b) To kill or would treacherously individuals belonging ... to the hostile nation or army;
- (c) To employ arms, projectiles, or material calculated to ... cause unnecessary suffering;

TREATY OF PEACE WITH GERMANY  
CONCLUDED AT VERSAILLES  
28 JUNE 1919

...

Article 171

The use of asphyxiating, poisonous or other gases and all analogous liquids, materials or devices being prohibited, their manufacture and importation are strictly forbidden in Germany.

The same applies to materials specially intended for the manufacture, storage and use of the said products or devices.

TREATY OF WASHINGTON OF 1922 RELATING TO THE  
USE OF SUBMARINES AND NOXIOUS GASES IN WARFARE  
SIGNED AT WASHINGTON, 6 FEBRUARY 1922

...

Article V

The use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices, having



been justly condemned by the general opinion of the civilised world and a prohibition of such use having been declared in Treaties to which a majority of the civilised Powers are parties,

The Signatory Powers, to the end that this prohibition shall be universally accepted as a part of international law binding alike the conscience and practice of nations, declare their assent to such a prohibition, agree to be bound thereby as between themselves and invite all other civilised nations to adhere thereto.

CONVENTION FOR THE LIMITATION OF ARMAMENTS  
OF CENTRAL AMERICAN STATES, SIGNED AT  
WASHINGTON, 7 FEBRUARY 1923

#### Article V

The contracting parties consider that the use in warfare of asphyxiating gases, poisons, or similar substances as well analogous liquids, materials or device, is contrary to humanitarian principles and to international law, and obligate themselves by the present convention not to use said substances in time of war.

...

APPENDIX 2

THE GENEVA PROTOCOL OF 1925

ENGLISH TEXT OF THE PROTOCOL

Protocol for the Prohibition of the Use in  
War of Asphyxiating, Poisonous or other  
Gases, and of Bacteriological Methods of  
Warfare, Signed at Geneva on 19 June 1925

The Undersigned Plenipotentiaries, in the name of their  
respective Governments:

Whereas the use in war of asphyxiating, poisonous or  
other gases, and of all analogous liquids, materials or  
devices, has been justly condemned by the general opinion  
of the civilized world; and

Whereas the prohibition of such use has been declared  
in Treaties to which the majority of Powers of the world  
are Parties; and

To the end that this prohibition shall be universally  
accepted as a part of International Law, binding alike the  
conscience and the practice of nations;

Declare:

That the High Contracting Parties, so far as they are  
not already Parties to Treaties prohibiting such use, accept  
this prohibition, agree to extend this prohibition to the use  
of bacteriological methods of warfare and agree to be bound  
as between themselves according to the terms of this  
declaration.

The High Contracting Parties will exert every effort to induce other States to accede to the present Protocol. Such accession will be notified to the Government of the French Republic, and by the latter to all signatory and acceding Powers, and will take effect on the date of the notification by the Government of the French Republic.

The present Protocol, of which the French and English texts are both authentic, shall be ratified as soon as possible. It shall bear to-day's date.

The ratifications of the present Protocol shall be addressed to the Government of the French Republic, which will at once notify the deposit of such ratification to each of the signatory and acceding Powers.

The instruments of ratification of and accession to the present Protocol will remain deposited in the archives of the Government of the French Republic.

The present Protocol will come into force for each signatory Power as from the date of deposit of its ratification, and, from that moment, each Power will be bound as regards other Powers which have already deposited their ratifications.

In witness whereof the Plenipotentiaries have signed the present Protocol.

Done in Geneva in a single copy, this seventeenth day of June, one thousand nine hundred and twenty-five.

APPENDIX 3

PARTIES TO THE PROTOCOL FOR THE PROHIBITION  
OF THE USE IN WAR OF ASPHYXIATING, POISONOUS  
OR OTHER GASES, AND OF BACTERIOLOGICAL  
METHODS OF WARFARE

SIGNED AT GENEVA ON 17 JUNE 1925.

ENTERED INTO FORCE ON 8 FEBRUARY 1928.

DEPOSITARY: FRENCH GOVERNMENT.

NUMBER OF PARTIES, AS OF 31 DECEMBER 1979: 99. (El Salvador  
and Nicaragua signed the Geneva Protocol on 17 June 1925  
but have not ratified it.)

For the text of the Geneva Protocol, see the SIPRI  
Yearbook 1974, p.418.

State	Ratification, accession or succession	State	Ratification, accession or succession
Argentina	12 May 1969	Indonesia	21 Jan 1971 <sup>9</sup>
Australia	24 May 1930 <sup>1</sup>	Iran	5 Nov 1929
Austria	9 May 1928	Iraq	8 Sep 1931 <sup>1</sup>
Barbados	16 Jul 1976 <sup>2</sup>	Ireland	29 Aug 1930 <sup>10</sup>
Belgium	4 Dec 1928 <sup>1</sup>	Israel	20 Feb 1960 <sup>11</sup>
Bhutan	19 Feb 1979	Italy	3 Apr 1928
Brazil	28 Aug 1970	Ivory Coast	27 Jul 1970
Bulgaria	7 Mar 1934 <sup>1</sup>	Jamaica	28 Jul 1970 <sup>12</sup>
Canada	6 May 1930 <sup>1</sup>	Japan	21 May 1970
Central African Republic	31 Jul 1970	Jordan	17 Mar 1977 <sup>13</sup>
Chile	2 Jul 1935 <sup>1</sup>	Kenya	6 Jul 1970
China	24 Aug 1929 <sup>3</sup>	Kuwait	15 Dec 1971 <sup>14</sup>
Cuba	24 Jun 1966	Lebanon	17 Apr 1969
Cyprus	29 Nov 1966 <sup>4</sup>	Lesotho	10 Mar 1972 <sup>15</sup>
		Liberia	17 Jun 1927

Czechoslovakia	16 Aug 1938 <sup>5</sup>	Libya	29 Dec 1971 <sup>16</sup>
Denmark	5 May 1930	Luxembourg	1 Sep 1936
Dominican Republic	8 Dec 1970	Madagascar	2 Aug 1967
Ecuador	16 Sep 1970	Malawi	14 Sep 1970
Egypt	6 Dec 1928	Malaysia	10 Dec 1970
Ethiopia	20 Sep 1935 <sup>6</sup>	Maldives	27 Dec 1966 <sup>17</sup>
Fiji	21 Mar 1973 <sup>7</sup>	Malta	9 Oct 1970 <sup>18</sup>
Finland	26 Jun 1929	Mauritius	23 Dec 1970 <sup>19</sup>
France	10 May 1926 <sup>1</sup>	Mexico	28 May 1932
Gambia	5 Nov 1966 <sup>8</sup>	Monaco	6 Jan 1967
German Democratic Republic	25 Apr 1929	Mongolia	6 Dec 1968 <sup>20</sup>
Germany, Federal Republic of	25 Apr 1929	Morocco	13 Oct 1970
Ghana	3 May 1967	Nepal	9 May 1969
Greece	30 May 1931	Netherlands	31 Oct 1930 <sup>21</sup>
Holy See (Vatican City)	18 Oct 1966	New Zealand	24 May 1930 <sup>1</sup>
Hungary	11 Oct 1952	Niger	5 Apr 1967 <sup>22</sup>
Iceland	2 Nov 1967	Nigeria	15 Oct 1968 <sup>1</sup>
India	9 Apr 1930 <sup>1</sup>	Norway	27 Jul 1932
		Pakistan	15 Apr 1960 <sup>23</sup>
		Panama	4 Dec 1970
		Paraguay	22 Oct 1933 <sup>24</sup>
		Philippines	8 Jun 1973
		Poland	4 Feb 1929
		Portugal	1 Jul 1930 <sup>1</sup>

Qatar	18 Oct 1976	Tunisia	12 Jul 1967
Romania	23 Aug 1929 <sup>1</sup>	Turkey	5 Oct 1929
Rwanda	11 May 1964 <sup>25</sup>	Uganda	24 May 1965
Saudi Arabia	27 Jan 1971	Union of Soviet Socialist Republics	15 Apr 1928 <sup>29</sup>
Senegal	20 Jul 1977		
Sierra Leone	20 Mar 1967		
South Africa	24 May 1930 <sup>1</sup>	United Kingdom	9 Apr 1930 <sup>1</sup>
Spain	22 Aug 1929 <sup>26</sup>	United Republic of Tanzania	22 Apr 1963
Sri Lanka	20 Jan 1954	United States	10 Apr 1975 <sup>30</sup>
Sweden	25 Apr 1930	Upper Volta	3 Mar 1971
Switzerland	12 Jul 1932	Uruguay	12 Apr 1977
Syria	17 Dec 1968 <sup>27</sup>	Venezuela	8 Feb 1928
Thailand	6 Jun 1931	Yemen*	17 Mar 1971
Togo	5 Apr 1971	Yugoslavia	12 Apr 1929 <sup>31</sup>
Tonga	28 Jul 1971		
Trinidad and Tobago	24 Nov 1970 <sup>28</sup>		

\* Yemen refers to the Yemen Arab Republic (Northern Yemen).

- 1 The Protocol is binding on this state only as regards states which have signed and ratified or acceded to it. The Protocol will cease to be binding on this state in regard to any enemy state whose armed forces or whose allies fail to respect the prohibition laid down in the Protocol. (These reservations were made in similar terms by Australia, Belgium, Bulgaria, Canada, Chile, France, India, Iraq, New Zealand, Nigeria, Portugal, Romania, South Africa and the United Kingdom).
- 2 In a note of 22 June 1976, addressed to the depositary government, Barbados declared that it considered the Protocol to be in force in respect of Barbados in virtue of its extension to it by the United Kingdom. It further declared that as far as Barbados was concerned the reservation made on 9 April 1930 by the British Empire was withdrawn.

- 3 On 13 July 1952 the People's Republic of China issued a statement recognizing as binding upon it the accession to the Protocol in the name of China. The People's Republic of China considers itself bound by the Protocol on condition of reciprocity on the part of all the other contracting and acceding powers.
- 4 In a note of 21 November 1966, Cyprus declared that it was bound by the Protocol which had been made applicable to it by the British Empire.
- 5 Czechoslovakia shall cease to be bound by this Protocol towards any state whose armed forces, or the armed forces of whose allies, fail to respect the prohibitions laid down in the Protocol.
- 6 The document deposited by Ethiopia, a signer of the Protocol, is registered as an accession. The date given is the date of notification by the French government.
- 7 In a declaration of succession of 26 January 1973 addressed to the depositary government, Fiji confirmed that the provisions of the Protocol were applicable to it by virtue of the ratification by the United Kingdom. The Protocol is only binding on Fiji as regards states which have both signed and ratified it and which will have finally acceded thereto. The Protocol shall cease to be binding on Fiji in regard to any enemy state whose armed forces or the armed forces of whose allies fail to respect the prohibitions which are the object of the Protocol.
- 8 In a declaration of 11 October 1966, Gambia confirmed its adherence to the Protocol which had been made applicable to it by the British Empire.
- 9 In an official declaration of 13 January 1971 addressed to the depositary government, Indonesia reaffirmed its acceptance of the Protocol which had been ratified on its behalf by the Netherlands on 31 October 1930, and stated that it remained signatory to that Protocol.
- 10 The government of the Irish Free State does not intend to assume, by this accession, any obligation except towards the states having signed and ratified this Protocol or which shall have finally acceded thereto, and should the armed forces or the allies of an enemy state fail to respect the Protocol, the government of Irish Free State would cease to be bound by the said Protocol in regard to such state. In a note of 7 February 1972, received by the depositary government on 10 February 1972, Ireland declared that it had decided to withdraw the above reservations made at the time of accession to the Protocol.

- 11 The Protocol is binding on Israel only as regards states which have signed and ratified or acceded to it. The Protocol shall cease to be binding on Israel as regards any enemy state whose armed forces, or the armed forces of whose allies, or the regular or irregular forces, or groups or individuals operating from its territory, fail to respect the prohibitions which are the object of the Protocol.
- 12 Jamaica declared to the depositary government that it considered itself bound by the provisions of the Protocol on the basis of the ratification by the British Empire in 1930.
- 13 The accession by Jordan to the Protocol does not in any way imply recognition of Israel, and does not oblige Jordan to conclude with Israel any arrangement under the Protocol. Jordan undertakes to respect the obligations contained in the Protocol with regard to states which have undertaken similar commitments. It is not bound by the Protocol as regards states whose armed forces, regular or irregular, do not respect the provisions of the Protocol.
- 14 The accession of Kuwait to the Protocol does not in any way imply recognition of Israel or the establishment of relations with the latter on the basis of the present Protocol. In case of breach of the prohibition laid down in this Protocol by any of the parties, Kuwait will not be bound, with regard to the party committing the breach, to apply the provisions of this Protocol. In a note of 25 January 1972, addressed to the depositary government, Israel objected to the above reservations.
- 15 By a note of 10 February 1972 addressed to the depositary government, Lesotho confirmed that the provisions of the Protocol were applicable to it by virtue of the ratification by the British Empire on 9 April 1930.
- 16 The accession to the Protocol does not imply recognition or the establishment of any relations with Israel. The Protocol is binding on Libya only as regards states which are effectively bound by it, and will cease to be binding on Libya as regards states whose armed forces, or the armed forces of whose allies, fail to respect the prohibitions which are the object of this Protocol. In a note of 25 January 1972 addressed to the depositary government, Israel objected to the above reservations.
- 17 In a declaration of 19 December 1966, Maldives confirmed its adherence to the Protocol.



- 18 By a notification of 25 September 1970 Malta informed the depositary government that it considered itself bound by the Protocol as from 21 September 1964, the provisions of the Protocol having been extended to Malta by the government of the United Kingdom prior to the former's accession to independence.
- 19 By a notification of 27 November 1970, Mauritius informed the depositary government that it considered itself bound by the Protocol as from 12 March 1968, the date of its accession to independence.
- 20 In the case of violation of this prohibition by any state in relation to Mongolia or its allies, the government of Mongolia shall not consider itself bound by the obligations of the Protocol towards that state.
- 21 Including the Netherlands Indies, Suriname and Curacao. (On 25 November 1975 Suriname became a sovereign state.)
- As regards the use in war of asphyxiating, poisonous or other gases and of all analogous liquids, materials or devices, this Protocol shall cease to be binding on the Netherlands with regard to any enemy state whose armed forces or whose allies fail to respect the prohibitions laid down in the Protocol.
- 22 In a letter of 18 March 1967, Niger declared that it was bound by the adherence of France to the Protocol.
- 23 By a note of 13 April 1960, Pakistan informed the depositary government that it was party to the Protocol by virtue of paragraph 4 of the Annex to the Indian Independence Act of 1947.
- 24 This is the date of receipt of Paraguay's instrument of accession. The date of the notification by the depositary government "for the purpose of regularisation" is 13 January 1969.
- 25 In a declaration of 21 March 1964, Rwanda recognized that it was bound by the Protocol which had been made applicable to it by Belgium.
- 26 Spain<sup>24</sup> declared the Protocol as binding ipso facto, without special agreement with respect to any other member or state accepting and observing the same obligation, that is, on condition of reciprocity.

- 27 The accession by Syria to the Protocol does not in any case imply recognition of Israel or lead to the establishment of relations with the latter concerning the provisions laid down in the Protocol.
- 28 By a note of 9 October 1970, Trinidad and Tobago notified the depositary government that it considered itself bound by the Protocol, the provisions of which had been made applicable to Trinidad and Tobago by the British Empire prior to the former's accession to independence.
- 29 The Protocol only binds the Union of Soviet Socialist Republics in relation to the states which have signed and ratified or which have definitely acceded to the Protocol. The Protocol shall cease to be binding on the USSR in regard to any enemy state whose armed forces or whose allies de jure or in fact do not respect the prohibitions which are the object of this Protocol.
- 30 The Protocol shall cease to be binding on the United States with respect to the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials, or devices, in regard to any enemy state if such state or any of its allies fails to respect the prohibitions laid down in the Protocol.
- 31 The Protocol shall cease to be binding on Yugoslavia in regard to any enemy state whose armed forces or whose allies fail to respect the prohibitions which are the object of the Protocol.

APPENDIX 4

SELECTED UNITED NATIONS GENERAL  
ASSEMBLY RESOLUTIONS

RESOLUTION 2162 B (XXI)

Adopted on 5 December 1966 by the General Assembly, by a vote of 91 to none, with four abstentions (Albania, Cuba, France and Gabon):

The General Assembly,

Guided by the principles of the Charter of the United Nations and of international law,

Considering that weapons of mass destruction constitute a danger to all mankind and are incompatible with the accepted norms of civilization,

Affirming that the strict observance of the rules of international law on the conduct of warfare is in the interest of maintaining these standards of civilization,

Recalling that the Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, of June 1925, has been signed and adopted and is recognized by many states,

Noting that the Conference of the Eighteen-Nation Committee on Disarmament has the task of seeking an agreement on the cessation of the development and production of chemical and bacteriological weapons and other weapons from national arsenals, as called for in the draft proposals now before the Conference,

- (1) Calls for strict observance by all States of the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, and condemns all actions contrary to these objectives;
- (2) Invites all States to accede to the Geneva Protocol of 17 June 1925".

## RESOLUTION 2454 A (XXIII)

Adopted on 20 December 1968 by the General Assembly, by a vote of 107 to none, with two abstentions:

"The General Assembly,

Reaffirming the recommendations contained in its resolution 2162 B (XII) of 5 December 1966 calling for strict observance by all States of the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare signed at Geneva on 17 June 1925, condemning all actions contrary to these objectives and inviting all States to accede to that Protocol,

- ...
- (6) Reiterates its call for strict observance by all States of the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating,

Poisonous or Other Gases, and of Bacteriological Methods of Warfare signed at Geneva on 17 June 1925, and invites all States to accede to that Protocol".

RESOLUTION 2603 A (XXIV)

Adopted on 16 December 1969 by the General Assembly, by a vote of 80 to 3 with 36 abstentions;

"The General Assembly,

Considering that chemical and biological methods of warfare have always been viewed with horror and have been justly condemned by the international community,

Considering that these methods of warfare are inherently reprehensible, because their effects are often uncontrollable and unpredictable and may be injurious without distinction to combatants and non-combatants and because any use would entail a serious risk of escalation,

Recalling that successive international instruments have prohibited or sought to prevent the use of such methods of warfare,

Noting specifically in this regard:

(a) That the majority of States then in existence adhered to the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925,

(b) That since then further States have become Parties to that Protocol,

(c) That yet other States have declared that they will abide by its principles and objectives,

(d) That these principles and objectives have commanded broad respect in the practice of States,

(e) That the General Assembly, without any dissenting vote, has called for the strict observance by all States of the principles and objectives of the Geneva Protocol,

Recognizing therefore, in the light of the above circumstances, that the Geneva Protocol embodies the generally recognized rules of international law prohibiting the use in international armed conflicts of all biological and chemical methods of warfare, regardless of any technical developments,

Mindful of the report of the Group of Experts, appointed by the Secretary-General of the United Nations under General Assembly resolution 2454 A (XXIII) of 20 December 1968, on chemical and bacteriological (biological) weapons and the effects of their possible use,

Considering that this report and the foreword to it by the Secretary-General add further urgency for an affirmation of these rules and for dispelling for the future, any uncertainty as to their scope and, by such affirmation, assure the effectiveness of the rules and

enable all States to demonstrate their determination to comply with them,

Declares as contrary to the generally recognized rules of international law, as embodied in the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, the use in international armed conflicts of:

- (a) Any chemical agents of warfare - chemical substances, whether gaseous, liquid or solid - which might be employed because of their direct toxic effects on man, animals or plants;
- (b) Any biological agents of warfare - living organisms, whatever their nature, or infective material derived from them - which are intended to cause disease or death in man, animals or plants, and which depend for their effects on their ability to multiply in the person, animal or plant attacked".

Voting record

(Italicized entries are those countries which were parties to the Geneva Protocol at the time of voting.)

In favour:

Afghanistan, Algeria, Argentina, Brazil, Bulgaria, Burma, Burundi, Byelorussian Soviet Socialist Republic, Cameroon, Central African Republic, Ceylon, Chad, Colombia,

Congo (Brazzaville), Congo (Democratic Republic), Costa Rica, Cuba, Cyprus, Czechoslovakia, Dahomey, Dominican Republic, Ecuador, Equatorial Guinea, Ethiopia, Finland, Gabon, Ghana, Guatemala, Guinea, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Ireland, Ivory Coast, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Lesotho, Libya, Maldives, Mali, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Nepal, Niger, Nigeria, Pakistan, Panama, Peru, Poland, Romania, Rwanda, Saudi Arabia, Senegal, Somalia, Southern Yemen, Spain, Sudan, Sweden, Syria, Togo, Trinidad and Tobago, Uganda, Ukrainian Soviet Socialist Republic, Union of Soviet Socialist Republics, United Arab Republic, United Republic of Tanzania, Upper Volta, Yemen, Yugoslavia.

Against:

Australia, Portugal, United States of America.

Abstaining:

Austria, Belgium, Bolivia, Canada, Chile, China (Taiwan), Denmark, El Salvador, France, Greece, Iceland, Israel, Italy, Japan, Laos, Liberia, Luxembourg, Madagascar, Malawi, Malaysia, Netherlands, New Zealand, Nicaragua, Norway, Paraguay, Philippines, Sierra Leone, Singapore, South Africa, Swaziland, Thailand, Tunisia, Turkey, United Kingdom of Great Britain and Northern Ireland, Uruguay, Venezuela.



Absent:

Albania, Barbados, Botswana, Cambodia, Gambia,  
Malta, Zambia.

## RESOLUTION 2603 B (XXIV)

Adopted on 16 December 1969 by the General Assembly, by  
a vote of 120 to none, with one abstention:

"The General Assembly,

Recalling its resolution 2454 A (XXIII) of 20 December  
1968,

...  
Recognizing the importance of the Protocol for the  
Prohibition of the Use in War of Asphyxiating, Poisonous  
or Other Gases, and of Bacteriological Methods of Warfare,  
signed at Geneva, on 17 June 1925,

Conscious of the need to maintain inviolate the  
Geneva Protocol and to ensure its universal applicability,

...  
(1) Reaffirms its resolution 2162 B (XXI) of 5 December  
1966 and calls anew for strict observance by all States  
of the principles and objectives of the Protocol for the  
Prohibition of the Use in War of Asphyxiating, Poisonous  
or Other Gases, and of Bacteriological Methods of Warfare,  
signed at Geneva on 17 June 1925;

(2) Invites all States which have not yet done so to  
accede to or ratify the Geneva Protocol in the course of  
1970 in commemoration of the forty-fifth anniversary of  
its signing and the twenty-fifth anniversary of the United  
Nations;

..."

## RESOLUTION 2662 (XXIV)

Adopted on 7 December 1970 by the General Assembly, by a vote of 113 to none, with two abstentions:

"The General Assembly,

...

Recalling its resolution 2454 A (XXIII) of 20 December 1968 and 2603 B (XXIV) of 16 December 1969,

...

Conscious of the need to maintain the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, and to ensure its universal applicability,

Conscious of the urgent need for all States that have not already done so to accede to the Geneva Protocol of 1925,

1. Reaffirms its resolution 2162 B (XXI) of 5 December 1966 and calls anew for the strict observance by all States of the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925;

2. Invites all States that have not already done so to accede to or ratify the Geneva Protocol;

..."

## RESOLUTION 2677 (XXV)

Adopted on 9 December 1970 by the General Assembly, by a vote of 111 to none, with 4 abstentions:

"The General Assembly,

...

Convinced of the continuing value of existing humanitarian rules relating to armed conflicts, and in particular the Hague Conventions of 1899 and 1907, the Geneva Protocol of 1925 and the Geneva Conventions of 1949,

1. Calls upon all parties to any armed conflict to observe the rules laid down in the Hague Conventions of 1899 and 1907, the Geneva Protocol of 1925, the Geneva Conventions of 1949 and other humanitarian rules applicable in armed conflicts, and invites those States which have not yet done so to adhere to those Conventions;

..."

## RESOLUTION 2827 A (XXVI)

Adopted on 16 December 1971 by the General Assembly by a vote of 110 to none, with 1 abstention (France):

"The General Assembly,

...

5. Reaffirms its resolution 2162 B (XXI) of 5 December 1966 and calls anew for the strict observance by all

States of the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous and Other Gases, and of Bacteriological Methods of Warfare;

6. Invites all States that have not already done so to accede to or ratify the Protocol;

..."

#### PROHIBITION OF CHEMICAL WEAPONS

34/72

11 December 1979

Urges the Committees on Disarmament to undertake, at the beginning of its 1980 session, negotiations on an agreement on the complete and effective prohibition of the development, production and stockpiling of all chemical weapons and on their destruction, as a matter of high priority, taking into account all existing proposals and future initiatives.

- Adopted

without vote

#### PROHIBITION OF NEW WEAPONS OF MASS DESTRUCTION

34/79

11 December 1979

Requests the Committee on Disarmament, in the light of its existing priorities, actively to continue negotiations, with the assistance of qualified governmental

- In favour 117

Against 0

Abstentions 24

experts, with a view to preparing a draft comprehensive agreement on the prohibition of the development and manufacture of new types of weapons of mass destruction and new systems of such weapons and, where necessary, specific agreements on particular types of such weapons.

**BIOLOGICAL & CHEMICAL WEAPONS**

35/144A

12 December 1980

Welcomes the final declaration of the Review Conference of the parties to the convention on the prohibition of the development, production and stockpiling of bacteriological (biological) and toxin weapons and on their destruction, in which the states parties to the convention, inter alia: (a) reaffirmed their strong determination to exclude completely the possibility of bacteriological (biological) agents and toxins being used as weapons; (b) expressed the belief that article I had proved sufficiently comprehensive to have covered recent scientific and technological developments relevant to the convention; (c) considered that the flexibility of the provisions concerning consultations and co-operation on any problems which might arise in relation to the objective, or in the application of the provisions of, the convention enabled interested states parties to use various international procedures which would make it possible

- Adopted  
without  
vote

to ensure effectively and adequately the implementation of the provisions of the convention, taking into account the concern expressed by the participants in the conference to this effect - these procedures include, inter alia, the right of any state party subsequently to request that a consultative meeting open to all parties be convened at expert level - and, having noted the concerns and differing views expressed on the adequacy of article V, believed that this question should be further considered at an appropriate time; (d) reaffirmed the obligation assumed by the states parties to the Convention to continue negotiations in good faith towards the recognized objectives of an early agreement on complete, effective and adequately verifiable measures for the prohibition of the development, production and stockpiling of chemical weapons and for their destruction; and (e) noted that during the first five years of the operation of the Convention the provisions of article VI, VII, XI and XIII had not been invoked.

Calls upon all signatory states which have not ratified the Convention to do so without delay and upon those states which have not yet signed the Convention to consider acceding to it at an early date as a significant contribution to international confidence.

35/144C  
12 December 1980

Calls upon all states parties to the 1925 Protocol for the prohibition of the use in war of asphyxiating, poisonous, or other gases, and of bacteriological methods of warfare to reaffirm their determination strictly to observe all their obligations under the Protocol; calls upon all states which have not yet done so to accede to the Protocol; appeals to all states to comply with the principles and objectives of the Protocol; decides to carry out an impartial investigation to ascertain the facts pertaining to reports regarding the alleged use of chemical weapons and to assess the extent of the damage caused by the use of chemical weapons; requests the Secretary-General to carry out such investigation, inter alia, taking into account proposals advanced by the states on whose territories the use of chemical weapons has been reported, with the assistance of qualified medical and technical experts who shall: (a) seek relevant information from all concerned governments, international organisations and other sources

- In favour 78  
Against 17  
Abstaining 36

necessary; and (b) collect and examine evidence, including on-site with the consent of the countries concerned, to the extent relevant to the purposes of the investigation.

Invites the governments of states where chemical weapons were used to provide the Secretary-General with all relevant information they may have in their possession; calls upon all states to cooperate in this investigation and to provide any relevant information they may have in their possession; and requests the Secretary-General to submit a report on this matter to the General Assembly at its thirty-sixth session.

35/144B  
12 December 1980

Taking note of the joint report on the progress in the bilateral negotiations on the prohibition of chemical weapons, submitted by the USSR and the USA to the Committee on Disarmament on 7 July 1980, which regrettably have not yet resulted in the elaboration of a joint initiative,

- Adopted  
without vote



notes with satisfaction the work of the Committee on Disarmament during its session held in 1980 regarding the prohibition of chemical weapons, in particular the work of its ad hoc working group on that question, and urges the Committee to continue, as from the beginning of its session in 1981, negotiations on a multilateral convention as a matter of high priority, taking into account all existing proposals and future initiatives.

**NEW WEAPONS OF MASS DESTRUCTION**

35/149

12 December 1980

<p>Requests the Committee on Disarmament, in the light of its priorities, to continue negotiations, with the assistance of qualified governmental experts, with a view to preparing a draft comprehensive agreement on the prohibition of the development and manufacture of new types of weapons of mass destruction and new systems of such weapons, and to draft possible agreements on particular types of such weapons, and urges all states to refrain from any action which could adversely affect the talks aimed at working out an agreement or agreements to</p>	<p>- In favour 117 Against 0 Abstaining 26</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------

prevent the emergence of new types  
of weapons of mass destruction and new  
systems of such weapons.

APPENDIX 5

CONVENTION ON THE PROHIBITION OF THE  
DEVELOPMENT, PRODUCTION AND STOCK-  
PILING OF BACTERIOLOGICAL (BIOLOGICAL)  
AND TOXIN WEAPONS AND ON THEIR DESTRUCTION

The States Parties to this Convention,

Determined to act with a view to achieving effective progress towards general and complete disarmament, including the prohibition and elimination of all types of <sup>weapons of mass</sup> destruction, and convinced that the prohibition of the development, production and stockpiling of chemical and bacteriological (biological) weapons and their elimination, through effective measures, will facilitate the achievement of general and complete disarmament under strict and effective international control,

Recognising the important significance of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, and conscious also of the contribution which the said Protocol has already made, and continues to make, to mitigating the horrors of war,

Reaffirming their adherence to the principles and objectives of that Protocol and calling upon all States to comply with them,

Recalling that the General Assembly of the United Nations has repeatedly condemned all actions contrary to

the principles and objectives of the Geneva Protocol of 17 June 1925,

Desiring to contribute to the strengthening of confidence between peoples and the general improvement of the international atmosphere,

Desiring also to contribute to the realization of the purposes and principles of the Charter of the United Nations,

Convinced of the importance and urgency of eliminating from the arsenals of States, through effective measures, such dangerous weapons of mass destruction as those using chemical or bacteriological (biological) agents,

Recognizing that an agreement on the prohibition of bacteriological (biological) and toxin weapons represents a first possible step towards the achievement of agreement on effective measures also for prohibition of the development, production and stockpiling of chemical weapons, and determined to continue negotiations to that end,

Determined, for the sake of all mankind, to exclude completely the possibility of bacteriological (biological) agents and toxins being used as weapons,

Convinced that such use would be repugnant to the conscience of mankind and that no effort should be spared to minimize this risk,

Have agreed as follows:

**ARTICLE I**

Each State Party to this Convention undertakes never in any circumstances to develop, produce, stockpile or otherwise acquire or retain:

(a) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;

(b) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

**ARTICLE II**

Each State Party to this Convention undertakes to destroy, or to divert to peaceful purposes, as soon as possible but not later than nine months after the entry into force of the Convention, all agents, toxins, weapons, equipment and means of delivery specified in Article I of the Convention, which are in its possession or under its jurisdiction or control. In implementing the provisions of this article all necessary safety precautions shall be observed to protect populations and the environment.

**ARTICLE III**

Each State Party to this Convention undertakes not to transfer to any recipient whatsoever, directly or indirectly, and not in any way to assist, encourage, or induce any State, group of States or international organisations to

manufacture or otherwise acquire any of the agents, toxins, weapons, equipment or means of delivery specified in Article I of the Convention.

#### ARTICLE IV

Each State Party to this Convention shall, in accordance with its constitutional processes, take any necessary measures to prohibit and prevent development, production, stockpiling, acquisition or retention of the agents, toxins, weapons, equipment and means of delivery specified in Article I of the Convention, within the territory of such State, under its jurisdiction or under its control anywhere.

#### ARTICLE V

The States Parties to this Convention undertake to consult one another and to co-operate in solving any problems which may arise in relation to the objective of, or in the application of the provisions of, this Convention. Consultations and co-operation pursuant to this article may also be undertaken through appropriate international procedures within the framework of the United Nations and in accordance with its Charter.

#### ARTICLE VI

1. Any State Party to this Convention which finds that any other State Party is acting in breach of obligations deriving from the provisions of this Convention may lodge

a complaint with the Security Council of the United Nations. Such a complaint should include all possible evidence confirming its validity as well as a request for its consideration by the Security Council.

2. Each State Party to this Convention undertakes to co-operate in carrying out any investigation which the Security Council may initiate, in accordance with the provisions of the Charter of the United Nations, on the basis of the complaint received by the Council. The Security Council shall inform the States Parties to the Convention of the results of the investigation.

#### ARTICLE VII

Each State Party to this Convention undertakes to provide or support assistance, in accordance with the Charter of the United Nations, to any Party to the Convention which so requests, if the Security Council decides that such Party has been exposed to danger as a result of violation of this Convention.

#### ARTICLE VIII

Nothing in this Convention shall be interpreted as in any way limiting or detracting from the obligations assumed by any State under the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925.

**ARTICLE IX**

Each State Party to this Convention affirms the recognised objective of effective prohibition of chemical weapons and, to this end, undertakes to continue negotiations in good faith with a view to reaching early agreement on effective measures for the prohibition of their development, production and stockpiling and for their destruction, and on appropriate measures concerning equipment and means of delivery specifically designed for the production or use of chemical agents for weapons purposes.

**ARTICLE X**

1. The States Parties to this Convention undertake to facilitate and have the right to participate in the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes. Parties to this Convention in a position to do so shall also cooperate in contributing individually or together with other States or international organizations to this further development and application of scientific discoveries in the field of bacteriology (biology) for prevention of disease, or for other peaceful purposes.
2. This Convention shall be implemented in a manner designed to avoid hampering the economic or technological development of States Parties to the Convention or international



co-operation in the field of peaceful bacteriological (biological) activities, including the international exchange of bacteriological (biological) agents and toxins and equipment for the processing use or production of bacteriological (biological) agents and toxins for peaceful purposes in accordance with the provisions of this Convention.

#### ARTICLE XI

Any State Party may propose amendments to this Convention. Amendments shall enter into force for each State Party accepting the amendments upon their acceptance by a majority of the States Parties to this Convention and thereafter for each remaining State Party on the date of acceptance by it.

#### ARTICLE XII

Five years after the entry into force of this Convention, or earlier if it is requested by a majority of Parties to the Convention by submitting a proposal to this effect to the Depositary Governments, a conference of States Parties to the Convention shall be held at Geneva, Switzerland, to review the operation of this Convention, with a view to assuring that the purposes of the preamble and the provisions of the Convention, including the provisions concerning negotiations on chemical weapons, are being realized. Such

review shall take into account any new scientific and technological developments relevant to this Convention.

#### ARTICLE XIII

1. This Convention shall be of unlimited duration.
2. Each State Party to this Convention shall, in exercising its national sovereignty, have the right to withdraw from the Convention if it decides that extraordinary events, related to the subject matter of this Convention, have jeopardised the supreme interests of its country. It shall give notice of such withdrawal to all other States Parties to the Convention and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardised its supreme interests.

#### ARTICLE XIV

1. This Convention shall be open to all States for signature. Any State which does not sign the Convention before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.
2. This Convention shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of

America, which are hereby designated the Depositary Governments.

3. This Convention shall enter into force after the deposit of the instruments of ratification by twenty-two Governments, including the Governments designated as Depositaries of the Convention.

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Convention, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession and the date of the entry into force of this Convention, and of the receipt of other notices.

6. This Convention shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

#### ARTICLE XV

This Convention, the Chinese, English, French, Russian and Spanish texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Convention shall be transmitted

by the Depositary Governments to the Governments of the signatory and acceding States.

In witness whereof the undersigned, duly authorized, have signed this Convention.

Signed in London, Moscow, and/or Washington on 10 April 1972 by Afghanistan, Australia, Austria, Belgium, Bolivia, Botswana, Brazil, Bulgaria, Burma, Burundi, Byelorussia, Canada, Ceylon, Chile, Republic of China (Taiwan), Colombia, Central African Republic, Costa Rica, Cyprus, Czechoslovakia, Dahomey, Denmark, Dominican Republic, Egypt, El Salvador, Ethiopia, Finland, Gabon, Federal Republic of Germany, German Democratic Republic, Ghana, Greece, Haiti, Honduras, Hungary, Iceland, Iran, Ireland, Italy, Japan, Jordan, Khmer Republic, Republic of Korea, Laos, Lebanon, Lesotho, Liberia, Luxembourg, Malawi, Malaysia, Mali, Mauritius, Mexico, Mongolia, Nepal, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Peru, Philippines, Poland, Romania, Rwanda, Senegal, South Africa, Spain, Switzerland, Togo, Tunisia, Turkey, Ukraine, Union of Soviet Socialist Republics, United Kingdom, United States of America, Venezuela, Republic of Vietnam, Yemen Arab Republic, Yugoslavia, Zaire, and subsequently by

Saudi Arabia (12 April), Kuwait and Syria (14 April), People's Democratic Republic of Yemen (17 April), Niger

(21 April), Morocco and Panama (2 May), Guatemala (9 May),  
Ivory Coast (23 May), Ecuador (14 June), Singapore (19 June),  
Indonesia (21 June), Somali Democratic Republic (3 July)  
and Federal Republic of Nigeria (10 July 1972).

## APPENDIX 6

### PARTIES TO THE CONVENTION ON THE PROHIBITION OF THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF BACTERIOLOGICAL (BIOLOGICAL) AND TOXIN WEAPONS AND ON THEIR DESTRUCTION, AS OF 1 SEPTEMBER 1979

SIGNED AT LONDON, MOSCOW AND WASHINGTON ON 10 APRIL 1972.  
ENTERED INTO FORCE ON 26 MARCH 1975.  
DEPOSITARIES: UK, US AND SOVIET GOVERNMENTS.  
THE TOTAL NUMBER OF PARTIES, AS OF 1 SEPTEMBER 1979, IS 84.

Afghanistan	26 Mar 1975	Czechoslovakia	30 Apr 1973
Australia	5 Oct 1977	Democratic Yemen*	1 Jun 1979
Austria	10 Aug 1973 <sup>a</sup>	Denmark	1 Mar 1973
Barbados	16 Feb 1973	Dominican Republic	23 Feb 1973
Belgium	15 Mar 1979		
Benin	25 Mar 1975	Ecuador	12 Mar 1975
Bhutan	8 Jun 1978	Ethiopia	26 May 1975
Bolivia	30 Oct 1975	Fiji	4 Sep 1973
Brazil	27 Feb 1973	Finland	4 Feb 1974
Bulgaria	2 Aug 1972	German Democratic Republic	28 Nov 1972
Byelorussia	26 Mar 1975		
Canada	18 Sep 1972	Ghana	6 Jun 1975
Cape Verde	20 Oct 1977	Greece	10 Dec 1975
Congo	23 Oct 1978	Guatemala	19 Sep 1973
Costa Rica	17 Dec 1973	Guinea-Bissau	20 Aug 1976
Cuba	21 Apr 1976	Hungary	27 Dec 1972
Cyprus	6 Nov 1973	Iceland	15 Feb 1973

\*This refers to the People's Democratic Republic  
of Yemen (Southern Yemen)

India	15 Jul 1974 <sup>b</sup>	Philippines	21 Mar 1973
Iran	22 Aug 1973	Poland	25 Jan 1973
Ireland	27 Oct 1972 <sup>c</sup>	Portugal	15 May 1975
Italy	30 May 1975	Qatar	17 Apr 1975
Jamaica	13 Aug 1975	Romania	27 Jul 1979
Jordan	30 May 1975	Rwanda	20 May 1975
Kenya	7 Jan 1976	San Marino	11 Mar 1975
Kuwait	18 Jul 1972 <sup>d</sup>	Saudi Arabia	24 May 1972
Leo People's Democratic Republic	20 Mar 1973	Senegal	26 Mar 1975
Lebanon	26 Mar 1975	Sierra Leone	29 Jun 1976
Lesotho	6 Sep 1977	Singapore	2 Dec 1975
Luxembourg	23 Mar 1976	South Africa	3 Nov 1975
Malta	7 Apr 1975	Spain	20 Jun 1979
Mauritius	7 Aug 1972	Sweden	5 Feb 1976
Mexico	8 Apr 1974 <sup>e</sup>	Switzerland	4 May 1976 <sup>e</sup>
Mongolia	5 Sep 1972	Taiwan	9 Feb 1973 <sup>8</sup>
New Zealand	13 Dec 1972	Thailand	28 May 1975
Nicaragua	7 Aug 1975	Togo	10 Nov 1976
Niger	23 Jun 1972	Tonga	28 Sep 1976
Nigeria	3 Jul 1973	Tunisia	18 May 1973
Norway	1 Aug 1973	Turkey	25 Oct 1974
Pakistan	25 Sep 1974	Ukraine	26 Mar 1975
Panama	20 Mar 1974	Union of Soviet Socialist Republics	26 Mar 1975
Paraguay	9 Jun 1976	United Kingdom	26 Mar 1975 <sup>h</sup>
		United States	26 Mar 1975

Venezuela            18 Oct 1978    Yugoslavia Zaire            16 Sep 1975

The following states signed the Convention, but have not ratified it: Argentina, Botswana, Burma, Burundi, Central African Republic, Chile, Colombia, Democratic Kampuchea, Egypt, El Salvador, Gabon, Gambia, Federal Republic of Germany, Guyana, Haiti, Honduras, Indonesia, Iraq, Ivory Coast, Japan, South Korea, Liberia, Madagascar, Malawi, Malaysia, Mali, Morocco, Nepal, Netherlands, Peru, Somalia, Sri Lanka, Syria, United Arab Emirates, United Republic of Tanzania, Yemen (Northern Yemen).

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Notes:

- a     Considering the obligations resulting from its status as a permanently neutral state, Austria declares a reservation to the effect that its co-operation within the framework of this Convention cannot exceed the limits determined by the status of permanent neutrality and membership with the United Nations.
- b     In a statement made on the occasion of the signature of the Convention, India reiterated its understanding that the objective of the Convention is to eliminate biological and toxin weapons, thereby excluding completely the possibility of their use, and that the exemption in regard to biological agents or toxins, which would be permitted for prophylactic, protective or other peaceful purposes, would not in any way create a loophole in regard to the production or retention of biological and toxin weapons. Also any assistance which might be furnished under the terms of the Convention would be of a medical or humanitarian nature and in conformity with the Charter of the United Nations. The statement was repeated at the time of the deposit of the instrument of ratification.
- c     Ireland considers that the Convention could be undermined if reservations made by the parties to the 1925 Geneva Protocol were allowed to stand, as the prohibition of possession is incompatible with the right to retaliate, and that there should be an absolute and universal prohibition of the use of the weapons in question. Ireland notified the depositary government for the Geneva Protocol of the withdrawal of its reservations to the Protocol, made at the time of accession in 1930. The withdrawal applies to chemical as well as to bacterio-



logical (biological) and toxin agents of warfare.

- d In the understanding of Kuwait, its ratification of the Convention does not in any way imply its recognition of Israel, nor does it oblige it to apply the provisions of the Convention in respect of the said country.
- e Mexico considers that the Convention is only a first step towards an agreement prohibiting also the development, production and stockpiling of all chemical weapons, and notes the fact that the Convention contains an express commitment to continue negotiations in good faith with the aim of arriving at such an agreement.
- f The ratification by Switzerland contains the following reservations:
1. Owing to the fact that the Convention also applies to weapons, equipment or means of delivery designed to use biological agents or toxins, the delimitation of its scope of application can cause difficulties since there are scarcely any weapons, equipment or means of delivery peculiar to such use; therefore, Switzerland reserves the right to decide for itself what auxiliary means fall within that definition.
  2. By reason of the obligations resulting from its status as a perpetually neutral state, Switzerland is bound to make the general reservation that its collaboration within the framework of this Convention cannot go beyond the terms prescribed by that status. This reservation refers especially to Article VII of the Convention as well as to any similar clause that could replace or supplement that provision of the Convention (or any other arrangement).

In a note of 18 August 1976, addressed to the Swiss Ambassador, the US Secretary of State stated the following view of the US government with regard to the first reservation: The prohibition would apply only to (a) weapons, equipment and means of delivery, the design of which indicated that they could have no other use than that specified, and (b) weapons, equipment and means of delivery, the design of which indicated that they were specifically intended to be capable of the use specified. The government of the United States shares the view of the government of Switzerland that there are few weapons, equipment or means of delivery peculiar to the uses referred to. It does not, however,

believe that it would be appropriate, on this ground alone, for states to reserve unilaterally the right to decide which weapons, equipment or means of delivery fell within the definition. Therefore, while acknowledging the entry into force of the Convention between itself and the government of Switzerland, the United States government enters its objection to this reservation.

- g** The USSR stated that it considered the deposit of the instrument of ratification by Taiwan as an illegal act because the government of the Chinese People's Republic is the sole representative of China.
- h** The United Kingdom recalled its view that if a regime is not recognized as the government of a state, neither signature nor the deposit of any instrument by it, nor notification of any of those acts will bring about recognition of that regime by any other state. It declared that the provisions of the Convention shall not apply in regard to Southern Rhodesia unless and until the British government informs the other depositary governments that it is in a position to ensure that the obligations imposed by the Convention in respect of that territory can be fully implemented. In a note addressed to the British Embassy in Moscow, the Soviet government expressed the view that the United Kingdom carries the entire responsibility for Southern Rhodesia until the people of that territory acquire independence, and that this fully applies to the B<sup>1</sup> Convention.

## APPENDIX 7

### JOINT USSR-UNITED STATES REPORT ON PROGRESS IN THE BILATERAL NEGOTIATIONS ON THE PROHIBITION OF CHEMICAL WEAPONS

During the Vienna meeting of the leaders of the United States and the USSR in June 1979, both sides affirmed the importance of a general, complete, and verifiable prohibition of chemical weapons and agreed to intensify their efforts to prepare an agreed joint proposal for presentation to the Committee on Disarmament. The USSR and United States delegations are guided by this provision at the 10th series of the bilateral negotiations, which began on 16 July 1979.

In the negotiations, the United States and USSR delegations take into account the fact that prohibition of chemical weapons is, as was stressed in the Final Document of the United Nations General Assembly Special Session on Disarmament, one of the most urgent and vital problems in the area of disarmament. They are also guided by the requirement that a convention on the prohibition of chemical weapons, as any other international agreement in the field of arms control and disarmament, should enhance rather than diminish the security of the parties.

The USSR and United States delegations, taking into consideration the interest expressed by many delegations in the Committee on Disarmament concerning the status of

the bilateral negotiations on a prohibition of chemical weapons, present the following Joint Report:

1. The two sides believe that the scope of the prohibition should be determined on the basis of a general purpose criterion. Parties to the convention should assume the obligation never in any circumstances to develop, produce, stockpile, otherwise acquire or possess, or retain super-toxic lethal chemicals, other lethal or highly toxic chemicals or their precursors, with the exception of chemicals intended for permitted purposes of such types and in such quantities as are appropriate to these purposes, as well as chemical munitions or other means of chemical warfare. Negotiations are continuing on several issues relating to the scope of prohibition.

2. Permitted purposes are understood to mean non-hostile purposes (industrial, research, medical, or other peaceful purposes, law-enforcement purposes, and purposes of development and testing of means of protection against chemical weapons), as well as military purposes not related to chemical warfare.

3. In order to facilitate verification, it would be appropriate to use, in addition to the general purpose criterion, toxicity criteria and certain other provisions.

4. Agreement has been reached on the following approximate values for the additional criteria of toxicity mentioned above:

- (a)  $LCt_{50}$  = 2,000 mg min/m<sup>3</sup> for inhalation and/or  
 $LD_{50}$  = 0.5 mg/kg for subcutaneous injections;
- (b)  $LCt_{50}$  = 20,000 mg min/m<sup>3</sup> for inhalation and/or  
 $LD_{50}$  = 10 mg/kg for subcutaneous injections.

On the basis of these criteria, it will be possible to separate chemicals into appropriate categories, to each of which the general purpose criterion would be applied.

5. Different degrees of prohibition and limitation as well as differentiated methods of verification would be applied on the basis of these toxicity criteria and certain other provisions. These issues continue to be subjects of negotiations.

6. Negotiations are also continuing on definition of terms and several other issues.

7. The two sides have agreed that parties to the convention should assume an obligation not to transfer to anyone, whether directly or indirectly, the means of chemical warfare, and not in any way to assist, encourage, or induce any State, group of States, or any organisation to carry out activities which parties would undertake not to engage in pursuant to the convention.

8. The two sides have come to an understanding regarding the necessity for States to declare, immediately after they become parties to the convention, both the volumes of acquired stocks of means of chemical warfare and the means

of production of chemical munitions and chemicals covered by the convention. Plans for destruction of declared stocks of chemical weapons should also be declared. These declarations should contain information on the volume and timetables for destruction of such stocks. Plans for destruction or dismantling of relevant means of production should also be declared. In the course of the bilateral negotiations, the two sides are continuing to make efforts to agree on the specific content of the declarations concerning stocks of means of chemical warfare and concerning means of production. In this connexion, the basic concept of means of production is also a subject that remains to be resolved.

9. Agreement has been reached that stocks of means for chemical warfare should be destroyed or diverted for permitted purposes within ten years after a State becomes a party. Means of production should be shut down and eventually destroyed or dismantled. The destruction or dismantling of means of production should begin not later than eight years, and should be completed not later than ten years, after a State becomes a party.

10. In this connexion, the United States and the USSR believe that a future convention should contain provisions in accordance with which parties would periodically exchange statements and notifications concerning: the progress of

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the destruction of stocks of means of chemical warfare or their diversion for permitted purposes, the progress of the destruction or dismantling of means of production of chemical munitions and chemicals covered by the convention, and of the completion of these processes.

11. The USSR and the United States believe that the fulfilment of the obligations assumed under the future convention should be subject to the important requirement of adequate verification. They also believe that measures with respect to such verification should be based on a combination of national and international measures.

12. International verification measures should include the creation of a consultative committee. This committee could be convened as appropriate by the depositary of the convention, as well as upon request of any party.

13. The activities of the consultative committee in the interval between meetings should be carried out by a secretariat. The mandate of the secretariat is a subject of negotiations.

14. The participants should exchange, through the consultative committee or bilaterally, certain data on super-toxic lethal chemicals produced, acquired, accumulated, and used for permitted purposes, as well as on important lethal chemicals and the most important precursors used for permitted purposes. To this end, it is envisaged to

compile lists of the relevant chemicals and precursors. The two sides have reached a significant degree of mutual understanding in developing agreed approaches to the compilation of such lists. The scope of the data to be presented remains to be agreed.

15. Additional functions for the consultative committee remain under discussion.

16. In order to ensure the possibility of beginning the work of the consultative committee immediately after entry into force of the convention, the United States and the USSR believe it appropriate to begin the creation of a preparatory committee upon signature of the convention.

17. A convention should include provisions in accordance with which any party should have the right on a bilateral basis, or through the consultative committee, to request from another party with respect to which suspicions have arisen that it is acting in violation of obligations under the convention, relevant information on the actual state of affairs, as well as to request investigation of the actual state of affairs on site, providing appropriate reasons in support of the necessity of such an investigation.

18. A party may agree to such an on-site investigation or decide otherwise, providing appropriate explanations.

19. It should also be provided that any party could turn to the Security Council with a complaint which would



include appropriate rationale. In case of suspicion regarding compliance with the convention, the consultative committee, upon request of any party, or of the Security Council of the United Nations, could also take steps to establish the actual state of affairs.

20. The question of other international verification measures remains unresolved.

21. National measures would include the use of national technical means of verification in a manner consistent with generally accepted principles of international law. In this connexion, parties should not impede, including through the use of deliberate concealment measures, the national technical means of other parties in carrying out the aforementioned verification functions.

22. The USSR and the United States believe that a future convention should reflect the obligation of each party to take appropriate internal measures in accordance with its constitutional procedures to prohibit and prevent any activity contrary to the provisions of the convention anywhere under its jurisdiction or control.

23. Possibilities for confidence-building measures are being explored.

24. A future chemical weapons convention should include a withdrawal provision of the type included in other arms control and disarmament agreements.

25. The question of the conditions for entry into force of the convention remains unagreed.

26. The two sides believe that an effective prohibition of chemical weapons will require working out a large number of technical questions which would be dealt with in annexes to the convention and which are now being studied.

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The United States and the Soviet Union note the great importance attached to the elaboration of a convention by the General Assembly of the United Nations and the Committee on Disarmament which manifested itself, in particular, in the identification of the question of the prohibition of chemical weapons as one of the priority items on the agenda adopted for the current session of the Committee on Disarmament. Both sides will exert their best efforts to complete the bilateral negotiations and present a joint initiative to the Committee on Disarmament on this most important and extremely complex problem as soon as possible.

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