

IX

Weapons of Warfare

Law and Responsibility in Warfare 153 (Peter D. Trooboff ed., 1975)

Any analysis of the legality of using lachrymatories, napalm, and herbicides (defoliants) should not, in my view, be confined to determining their status under the 1925 Geneva Protocol¹ and customary international law. As I have urged elsewhere, we should concern ourselves with the future, not just the past.² I will, therefore, attempt here not only to examine the existing law regarding these weapons, but also to look ahead to what this country's policy should be toward their use in armed conflicts.

Lachrymatories

CS,³ the modern-day lachrymatory or tear gas, is a sensory irritant that harasses and incapacitates by causing a copious flow of tears. While it may sometimes cause irritation, and even blistering, of the skin and, occasionally, nausea and vomiting, the symptoms will usually quickly disappear when the victim is removed from the contaminated area.⁴ The incapacity caused by tear gas is said to be "a temporary, reversible disability with few, if any, permanent effects."⁵ It is used by most of the police forces of the world for domestic riot-control purposes.⁶ Its great advantage over older tear gases, and others currently available such as CN, is the speed with which it incapacitates—about five seconds after exposure. CS is, of course, only a modern version of tear gas, which has long been available in other forms.

Strangely enough, it may truthfully be said that the United States introduced the use of CS in hostilities in Vietnam for humanitarian reasons. One of the first uses of CS, in September 1965, actually accomplished this purpose. A Viet Cong force was holed up in a tunnel. The United States commander believed that there were also quite a few civilian noncombatants, women, and children in the tunnel. He decided to use CS and succeeded in flushing out about four hundred people, including seventeen armed Viet Cong, without inflicting any injuries or causing any deaths.⁷ A second use of CS that might be termed "humanitarian" was in helicopter missions to remove the wounded from the field of combat and to rescue downed fliers. In these cases the surrounding area was saturated with

CS in order to hold down small-arms fire against the helicopter during the course of its pickup mission.

However, CS proved so effective for these purposes that its use was quickly extended to include numerous methods of delivery, both by air and on the ground, and many types of combat operations. Among the combat uses in Vietnam listed by various students of the matter are:

Defensive operations:

1. Defending perimeters (to repulse attacks on outposts and other fortified areas);
2. Covering the removal of troops by helicopter (an extension to defensive combat operations of the original humanitarian purpose of removing the wounded and rescuing downed fliers); and
3. Responding to the ambush of convoys (the ambushing troops, who, being unseen, were not good targets for small arms, were frustrated by the use of CS covering wide areas on both sides of the road).

Offensive operations:

1. Flushing the enemy from tunnels, caves, bunkers, fortifications, etc. (this considerably reduced the number of friendly casualties);
2. Covering the landing of troops by helicopter (an extension to offensive combat operations of the original humanitarian purpose);
3. Contaminating an area and thus denying its use to the enemy (while CS is not particularly persistent, during dry spells it can be stirred up by the movement of a vehicle for some period of time); and
4. Reconnoitering enemy troop positions (CS forced concealed troops to reveal their position).⁸

Thus we find CS not being employed for humanitarian purposes to reduce the number of casualties, particularly of noncombatants. Instead, it was being used in conjunction with small-arms and artillery fire and with high-explosive and antipersonnel bombs. The individual driven from his place of safety by the tear gas thus became the victim of the conventional weapon.⁹ One commentator believes that developing these uses for tear gas, far from having a humanitarian result, actually increased the number of casualties among noncombatants. He concludes that tear gas forced noncombatants from cover, exposing them to weapons from which they would otherwise have been protected.¹⁰

Was there anything illegal about the use of these combat procedures? Only if there is some norm of international law, either contractual or customary, prohibiting the use of tear gas in international armed conflict. The questions that then arise are: Do the prohibitions of the 1925 Geneva Protocol include a ban on the use of incapacitating gases, such as tear gas? And, if so, has this ban become

a part of customary international law, binding on nations such as the United States that were not parties to the Protocol during the hostilities?

On both of these questions there is a sharp difference of opinion among the writers. There are those who believe that, because of the discrepancy in wording between the English and French versions of the Protocol,¹¹ or for other reasons, tear gases such as CS are not included in the treaty ban.¹² There are others who are just as certain that they are.¹³

Even if one assumes that tear gases are included within the prohibitions of the Protocol, that, of course, merely establishes a contractual ban. It does not necessarily mean that there was a norm of customary international law binding on the United States, then not yet a party to the Protocol.¹⁴ There is just as sharp a division of thought among the experts as to whether there is a norm of customary international law prohibiting the use of tear gas in international armed conflict.¹⁵ The positions taken in the writings on the customary law raise three questions that, in my view, remain unanswered.

1. If the Protocol itself is so indefinite that many articles have been written interpreting it both as banning the use of tear gas in international armed conflict and as not covering incapacitating gases such as tear gas, how can it be said to constitute the basis for, or represent the codification of, a norm of customary international law on the subject?

2. If there is a norm of customary international law banning the use of incapacitating gases, such as tear gas, in international armed conflict, what is the significance of the many reservations to the Protocol making the ratifications applicable only with respect to other parties to the Protocol? Are the reserving states not saying that they are free from any ban on the use of any gas, including incapacitating gases, in hostilities with nonparties? If they are not saying that, what are they saying in the reservations?

3. What do writers such as Lauterpacht¹⁶ and Stone¹⁷ mean when they say that the prohibition on the use of gas (which would presumably include tear gases) is binding upon "practically all States"? How can a rule of customary international law be binding only on practically all states?

Setting aside the unresolved legal problems, what are the practicalities that have motivated nations and international lawyers to find that international law, by treaty and by rule of custom, prohibits the use in international armed conflict of a comparatively harmless gas such as CS?¹⁸ The answer appears to be that there exists a well-founded fear that unless all gases, including the incapacitating gases, are considered barred, nations will build up their production capabilities and their reserves and these will not be limited to incapacitating gases.¹⁹ This did, of course, occur.²⁰ Furthermore, it is feared that if some gases are not included in the ban, it will be difficult, if not impossible, to draw a clear line between the lawful and the unlawful.²¹ If tear gases are allowed because of their

nonpermanent effect, why not, for example, a psychochemical that gives the victim temporary hallucinations, or a gas that painlessly immobilizes the victim for a number of hours? Finally, there exists the fear that any use of gas, even an agent that is generally admitted to be only temporarily incapacitating, will inevitably escalate into more extensive gas warfare.²² We have seen that the use of CS in Vietnam started out with a narrow humanitarian purpose and expanded into a major operational combat weapon. While the escalation fortunately did not go any farther, that possibility was always present.

On the basis of the available materials, I am frankly unable to say that the United States was bound during the Vietnam War by any rule of international law prohibiting the use of tear gas in international armed conflict. I am convinced, however, that morally and politically the United States would be well advised to adopt and follow a policy of self-denial. This country should adopt a policy of no first use of tear gas just as it has announced such a policy for other gases.²³ While the original use of CS in Vietnam may have had a humanitarian basis, the varied combat uses subsequently adopted were actually antihumanitarian in nature and result. The United States has isolated itself politically in this area. It has also created the possibility that the use of tear gas in some future conflict will gradually escalate into full-fledged gas warfare. The advantages derived from the use of tear gas in Vietnam, even assuming that such use was completely in accordance with international law, were not worth the price that had to be paid.

Napalm

Fire has, of course, been used as a weapon since time immemorial. Military forces relied heavily on flamethrowers during World War I and even more so during World War II. Similarly, magnesium and white-phosphorous fire bombs were widely employed during World War II both in Europe and in the Far East.

Napalm was first developed and used during World War II.²⁴ At no time during either world war did a substantial or authoritative voice challenge the legality of using fire as a weapon in international armed conflict. When napalm was used extensively for the first time, in Korea, cries of outrage were heard. But these protests came almost exclusively from the side whose troops were receiving it and were unable to reciprocate in kind. During the Vietnam War these protests grew in volume, and they had support from elements throughout the world.

Napalm is a gelled gasoline. The word itself is an acronym for the two ingredients that were thought to constitute the thickener that is added to the gasoline to produce the gel.²⁵ It is an extremely effective weapon and

undoubtedly the most valuable incendiary now available. Napalm is greatly feared, and its use causes far more panic than other weapons.

For these reasons, the United Nations Group of Consultant Experts on Chemical and Bacteriological (Biological) Weapons stated that napalm should be classified with high-explosive weapons, rather than with asphyxiating or poisonous gases.²⁶ Resolution XXIII of the International Conference on Human Rights, adopted in Tehran on 12 May 1968, contained a preambulatory clause classifying napalm bombing with chemical warfare.²⁷ This portion of the resolution was omitted from General Assembly Resolution 2444 (XXIII), which resulted from the Tehran conference.

In a report to the International Conference of the Red Cross, held in Istanbul in 1969, the International Committee of the Red Cross (ICRC) noted that napalm is a weapon that "can be very effective, while remaining precise in its consequences"; and that "napalm and incendiary weapons in general are not specifically prohibited by any rule of international law."²⁸ Some members of the Group of Experts convened by the ICRC expressed the opinion that napalm falls within the coverage of the 1925 Protocol because it can cause asphyxia by air deprivation. Others "considered such an assimilation difficult" and concluded that it is the use to which the weapon is put that determines its legality.²⁹ Napalm has also been condemned as causing unnecessary suffering in violation of the 1907 Hague Regulations.³⁰

I do not believe that, at present, there is any rule of international law that prohibits the use of napalm upon selected targets, but there is, as I have argued previously, a strong humanitarian basis for urging total prohibition.³¹ However, as a practical matter, a meaningful agreement probably will not be reached to ban a weapon as effective as napalm has proved itself to be. As an alternative, I concur in the proposal that the Secretary-General of the United Nations have prepared, with the assistance of qualified consultant experts, a report on napalm similar to the one on chemical and bacteriological (biological) weapons.³² Such a report would examine whether it is necessary to limit or prohibit the use of napalm in international armed conflict. If either of these types of action is agreed upon, the report would serve as a basis for drafting an international convention on napalm.

Herbicides (Defoliants)

Herbicides (defoliants) are agricultural chemicals that poison or desiccate the leaves of plants, causing them either to lose their leaves or to die. When herbicides cause leaf fall, whether they kill the plant or not, they are known as defoliants. While the first actual use of herbicides in armed conflict was probably during the Vietnam War, they are far from a new weapon. In 1945 the United

States had already developed herbicides known as LN agents, which were stated to be effective against plants, but not injurious to animals or humans. Some consideration was given to their use against the gardens that supplied food to the Japanese military on Pacific islands that the Allied forces bypassed in their advance toward Japan.³³ But no such action was actually taken. Herbicides have, of course, had considerable use as weed-control agents.

As in the case of CS, the passage of time brought about a major change in the nature of the use of herbicides in Vietnam. While the original use was to defoliate jungle growths in order to open up to view enemy infiltration routes, a number of other uses were soon found. Crop destruction subsequently assumed some importance, although it never displaced defoliation as the primary use.³⁴ By 1968 the extent of the use of herbicides was limited only by the availability of supplies.³⁵ Some of the uses to which herbicides were put in Vietnam included:

1. Defoliating enemy infiltration routes—to open them to view;³⁶
2. Defoliating friendly base perimeters—to prevent sneak attacks;
3. Defoliating lines of communication, including river banks—to prevent ambushes;
4. Defoliating enemy base areas—to make his troops move; and
5. Destroying crops—to make the enemy divert his combat efforts to food procurement and supply.³⁷

Once again, there is a sharp division of opinion among the experts on the applicability of the 1925 Geneva Protocol to herbicides. Some believe that the Protocol includes a ban on antiplant chemicals. They concede that the evidence to support this finding is comparatively weak.³⁸ Their strongest argument is not the legislative history, which they heavily rely upon. It is rather the practical, not legal, point that, as in the case of incapacitating gases, it is impossible to draw a clear line between what is prohibited and what is not. As a result, unless nations consider all herbicides as banned, the possibility of escalation is ever present.³⁹

Other writers find no prohibition in the 1925 Geneva Protocol or in customary international law against the use of herbicides.⁴⁰ They are particularly certain of this conclusion if defoliation has a valid military purpose and if crop destruction is limited to crops destined for consumption by the military.⁴¹ It is, perhaps, appropriate to note two arguments that have been advanced in support of this basic thesis. The validity of each has been attacked.

The first is that because herbicides are widely used domestically to control weeds and other unwanted vegetation, the Protocol (and, presumably, customary international law) cannot possibly have been intended to apply to them.⁴² This argument is correctly met with the response that evidence of domestic use is irrelevant for these purposes.⁴³ There is nothing to prevent

nations from banning the use as a weapon in international armed conflict of chemicals that may be permitted within the boundaries of many of these same nations.⁴⁴ On the other hand, the weakness of this particular argument concerning domestic use of herbicides may not be relied upon to support the view that herbicides are within the reach of the Protocol or of customary international law.

The second argument sometimes advanced against Protocol coverage of herbicides is that it could not have been intended to prohibit the use of herbicides because their military use was unknown in 1925. This is challenged as being of no legal significance if the prohibition falls within the objectives that the parties were attempting to achieve by the Protocol.⁴⁵ A similar reply was advanced long ago with respect to Protocol coverage of nuclear weapons.⁴⁶ I had difficulty in accepting this view in the context of nuclear weapons. It is equally difficult to support it in this context. The acceptance of such an interpretation could virtually convert a treaty prohibiting the use of certain gases in international armed conflict into a treaty banning war. Salutary as this result might be, I scarcely believe that a legal justification can be found for it. And, of course, if the Protocol is inapplicable, it cannot represent the codification of a norm of customary international law outlawing herbicides.

One of the major practical arguments advanced against the use of herbicides is ecological in character. The report of the United Nations group of consultant experts stated that there had been no scientific evaluation of the long-term ecological changes caused by herbicide spraying. They were able to estimate that twenty years will be needed to regenerate the mangrove forests along the river banks in Vietnam.⁴⁷ Another scientist warns that "when we intervene in the ecology of a region on a massive scale we may set in motion an irreversible chain of events."⁴⁸ One nonscientist writer in the field coined the word "ecocide" in asserting that a recent scientific study indicated that permanent damage had been done to "future generations [in Southeast Asia] and the very nature of the earth."⁴⁹

The United States heeded the admonitions of the environmentalists and substantially phased out its herbicide-spraying program in Vietnam. When it did so, it sought acceptable substitutes that would accomplish the same missions. Two seemingly noncontroversial methods were adopted: plows that tore up the vegetation along roads and trails to reduce ambushes, and concussion bombs that, by exploding horizontally, destroyed vegetation without cratering. The environmentalists, concerned only with their "thing," attacked the use of these new technologies.⁵⁰ Perhaps they will soon make the side effects of war so unpopular that they will succeed where the statesman and the international lawyer have long labored in vain—they will make it impossible for wars to be fought by denying all weapons to their military forces.

I am inclined to conclude that international law does not prohibit the use of herbicides so long as such use does not violate any of the general norms of the laws of war. This means that the destruction caused by herbicides must have a valid military purpose and that a food crop that is sprayed has to be identifiable as being grown for the use of the military. However, this is a weapon the ultimate effects of which are not now really predictable. It is one that may cause a complete upsetting of the life cycle of a treated area. Ultimately, the use of such a weapon may be as destructive to mankind as a nuclear or biological war. It appears not only that the United States was well advised to phase out its use of this weapon, but also that it should cut off the supply to South Vietnam in order to eliminate completely the use of herbicides in that country. With its ratification of the Geneva Protocol of 1925, the United States has now taken the first step by voluntarily renouncing the first use of herbicides, with certain minor exceptions.⁵¹

Notes

1. The United States was not a party to the 1925 Geneva Protocol at the time of the Vietnam War. President Nixon submitted it to the Senate for its advice and consent to ratification on 19 August 1970 (U.S., Congress, Senate, Foreign Relations Committee, *Committee Print: Message by President Richard M. Nixon of August 19, 1970, and Report by Secretary of State William P. Rogers*, 91st Cong., 2d Sess., 1970; 63 *Dep't State Bull.* 273 [1970]). Because of a disagreement as to coverage, the Senate had not acted on the Protocol for four years.

On 5 August 1974, by a 315-70 vote, the House of Representatives passed House Res. No. 1258, declaring the sense of the House that the United States should ratify the 1925 Geneva Protocol and that "the President and the Congress should resolve the position of the United States on the future status of herbicides and tear gas so that the Senate may move toward ratification...." 120 *Congressional Record* H 7651-56, 7673 (daily ed. 5 August 1974). See U.S., Congress, House, Committee on Foreign Affairs, *Ratification of the Geneva Protocol of 1925*, H. Rep. 93-1257, 93d Cong., 2d Sess., 1974. The Protocol has now been ratified by the United States and will soon enter into force for it. For an account of the Senate action leading to its advice and consent to ratification, see Introduction, p. 17 and n. 37.

2. Howard Levie, "Some Major Inadequacies in the Existing Law Relating to the Protection of Individuals During Armed Conflict," in *When Battle Rages, How Can Law Protect?*, ed. John Carey, Hammarskjöld Forum Series, no. 14 (Dobbs Ferry: Oceana Publications, for the Association of the Bar of the City of New York, 1971), p. 18.

3. Contrary to the statement that appears in Seymour Hersh, *Chemical and Biological Warfare: America's Hidden Arsenal* (New York: Doubleday & Company, 1969) p.51, the "S" in CS does not stand for "super." The name is derived from its codevelopers, B. B. Corson and R. W. Staughton, as reported in Stewart Blumenfeld and Matthew Meselson, "The Military Value and Political Implications of the Use of Riot Control Agents in Warfare," in *The Control of Chemical and Biological Weapons*, ed. A. Alexander et al. (New York: Carnegie Endowment for International Peace, 1971), p. 68 (hereafter cited as *Control of Chemical and Biological Weapons*).

4. U.N., *CB Weapons*, paras. 44 and 153.

5. *Ibid.*, para. 147. In Blumenfeld and Meselson, "Military Value," in *Control of Chemical and Biological Weapons*, p. 69, the statement is made that "for CS the difference between an incapacitating exposure and one that might produce serious lasting effects is quite large, a factor of many thousands."

6. A frequently quoted statement is that made by the United States representative (James M. Nabrit, Jr.) during a debate in the United Nations General Assembly on 5 December 1966. He said: "It would be unreasonable to contend that any rule of international law prohibits the use in combat against an enemy, for humanitarian purposes, of agents that Governments around the world commonly use to control riots by their own people" (*Documents on Disarmament* [Washington, D.C.: United States Arms Control and Disarmament

Agency, 1966], p. 801). A much-publicized domestic use of CS was in the riot at the Attica Correctional Facility in New York during 1971 (see *New York Times*, 14 September 1971, p. 1).

7. Blumenfeld and Meselson, "Military Value," in *Control of Chemical and Biological Weapons*, pp. 67-68.

8. *Ibid.*, pp. 71-75. See also testimony of Matthew Meselson, Senate Subcommittee on Refugees, *Hearings on War-Related Civilian Problems in Indochina*, 92d Cong., 1st Sess., April 1971, pp. 133-37; Professor Meselson's testimony and preliminary report, Herbicide Assessment Commission, American Association for the Advancement of Science, "The Effects and Use of Herbicides in Vietnam," U.S., Congress, Senate, Foreign Relations Committee, *Hearings on Geneva Protocol of 1925*, 92d Cong., 1st Sess., March 1971, pp. 353-77; and testimony of Admiral Lemos, U.S., Congress, House, Subcommittee on National Security Policy and Scientific Developments of the House Committee on Foreign Affairs, *Hearings on Chemical-Biological Weapons*, 91st Cong., 1st Sess., November and December 1972, pp. 225-28.

9. George Bunn, "Banning Poison Gas and Germ Warfare: Should the United States Agree?" [1969] *Wis. L. Rev.* 405-6. Ann Van Wynen Thomas and A. J. Thomas, Jr., *Legal Limits on the Use of Chemical and Biological Weapons* (Dallas: Southern Methodist University Press, 1970), p. 149, find that "the tear gas remains a nonlethal agent. The actual killer is the fragmentation bomb."

10. Meselson testimony, *Hearings on Geneva Protocol of 1925*, pp. 353-57. The House Committee on Foreign Affairs recommended in its report on H. Res. No. 1258 that the Senate consider exercising its Constitutional prerogative to ratify the 1925 Geneva Protocol without the interpretation made by the Administration that the treaty does not cover herbicides and tear gas (House Foreign Affairs Committee, *Geneva Protocol of 1925*, p. 4). See also testimony of Professor Richard R. Baxter, U.S., Congress, House, Subcommittee on National Security Policy and Scientific Developments, Committee on Foreign Affairs, *Hearings on U.S. Chemical Warfare Policy*, 93d Cong., 2d Sess., 7 May 1974, pp. 139-40.

11. The English version of the Protocol uses the words "asphyxiating, poisonous or other gases." The word "other" has been interpreted by some writers to include gases that are not asphyxiating or poisonous. The French version of the Protocol uses the words "gaz asphyxiants, toxiques ou similaires." The word "similaires" has been interpreted by some writers to limit the coverage to gases that are "asphyxiants" or "toxiques." For an excellent discussion of this problem in semantics see Henri Meyrowitz, *Les Armes biologiques et le droit international* (Paris: Editions A. Pedore, 1968), pp. 38-45.

12. See, for example, "Report by Secretary of State William P. Rogers to President Richard M. Nixon, 11 August 1970," 63 *Dep't State Bull.* 273, 274 (1970); Greenspan, *Modern Law of Land Warfare*, p. 359.

13. See, for example, Oppenheim, *International Law*, ed. Lauterpacht, p. 344, n. 1; Richard R. Baxter and Thomas Buergenthal, "Legal Aspects of the Geneva Protocol of 1925," in *Control of Chemical and Biological Weapons*, p. 14 (also published in 64 *A. J. I. L.* 853, 866 [1970]). In 1930 the British government expressed the opinion that the use of tear gas was banned by the Protocol (Oppenheim, *International Law*, ed. Lauterpacht, p. 344, n. 1). In 1970 it reversed its stand (*New York Times*, 3 Feb. 1970, p. 3).

14. Baxter and Buergenthal, "Legal Aspects," in *Control of Chemical and Biological Weapons*, p. 3.

15. For authorities supporting the existence of such a norm, see *ibid.*, p. 32, n. 8; contrary, see Denise Bindschedler-Robert, "A Reconsideration of the Law of Armed Conflicts," in *Law of Armed Conflicts*.

16. Oppenheim, *International Law*, ed. Lauterpacht, p. 344.

17. Stone, *Legal Controls*, p. 556.

18. While some of the extreme antiwar organizations insisted that they had identified cases in which individuals had been killed by CS, the more responsible scientists do not agree. See notes 4 and 5 above. Moreover, CS has been used in literally hundreds of cases of domestic disturbances with no deaths being charged to it.

19. Bunn, "Banning Poison Gas," p. 404. Unfortunately, even a specific ban on the use of tear gas in international armed conflict would have no effect in this area because of its use for domestic riot-control purposes throughout the world.

20. Stone, *Legal Controls*, p. 556-57.

21. Bunn, "Banning Poison Gas," p. 404.

22. Matthew Meselson, "Ethical Problems: Preventing CBW," in *CBW: Chemical and Biological Warfare*, ed. Steven Rose (Boston: Beacon Press, 1969) p. 167. In World War I tear gas was used as early as 1914. It did not prove effective and it was followed in 1915 by the more effective lethal gases.

23. 61 *Dep't State Bull.* 541 (1969). With several stated exceptions, the United States has now done this. See Introduction, p. 17 and n. 37.

24. Victor Sidel, "Napalm," in *CBW*, ed. Rose, p. 45.

25. *Ibid.*, p. 44.

26. U.N., *CB Weapons*, para. 19. See also Sidel, "Napalm," in *CBW*, ed. Rose; and Baxter and Buergenthal, "Legal Aspects," in *Control of Chemical and Biological Weapons*, p. 33, n. 10.

27. 8 *Int'l Rev. Red Cross* 473 (1968).

28. ICRC, *Reaffirmation and Development of the Laws and Customs Applicable in Armed Conflict: Report to the Twenty-first International Conference* (Geneva: ICRC, 1969), p. 61. To the same effect see, for example, Ian Brownlie, "Legal Aspects of CBW," in *CBW*, ed. Rose, p. 150, and Van Wynen Thomas and Thomas, *Legal Limits*, p. 185.

29. ICRC, *Reaffirmation and Development*, pp. 61-62.

30. This contention is based upon the provisions of art. 23(e) of the Hague Regulations.

31. I have previously recommended that the use of napalm in international armed conflict be prohibited. See Levie, "Some Major Inadequacies," in *When Battle Rages*, ed. Carey, pp. 20-21. (In so doing, I erroneously classified napalm as a chemical weapon. This was, however, irrelevant to the recommendation.)

32. This suggestion was made in the report of the U.N. Secretary-General, *Respect for Human Rights in Armed Conflict*, U.N. Doc. A/8052 (1970), para. 126. Since the foregoing was written, the U.N. General Assembly has made such a request of the Secretary-General in G.A. Res. 2852, 28 U.N. GAOR Supp. 29, p. 50, U.N. Doc. A/8429 (1971); the Secretary-General appointed a group of government experts, which, incidentally, did not include a representative of the United States, and the experts prepared and filed a Report (Report of the Secretary-General, *Napalm and Other Incendiary Weapons and All Aspects of Their Possible Use*, U.N. Doc. A/8803/Rev. 1 [1973]). The final paragraph of that report states: "193....[I]n view of the facts presented in the report, the group of consultant experts wishes to bring to the attention of the General Assembly the necessity of working out measures for the prohibition of the use, production, development and stockpiling of napalm and other incendiary weapons." A finding of "the necessity of working out measures for the prohibition for the use, production, development and stockpiling of napalm" would appear to confirm the conclusion reached in the text that there is currently no rule of international law that prohibits the use of napalm upon selected targets.

33. Judge Advocate General Myron C. Cramer to the Secretary of War, SPJGW 1945/164, March 1945, Memorandum concerning Destruction of Crops by Chemicals, 10 *Int'l Leg. Mat.* 1304 (1971).

34. Bunn, "Banning Poison Gas," pp. 408-9.

35. David E. Brown, "The Use of Herbicides in War: A Political/Military Analysis," in *Control of Chemical and Biological Weapons*, pp. 39-40.

36. It has been estimated that "vertical visibility improves in sprayed areas by 60 to 90 percent and ground visibility by a lesser amount" (Brown, "Use of Herbicides," in *Control of Chemical and Biological Weapons*, p. 46). See also John Constable and Matthew Meselson, "The Ecological Impact of Large Scale Defoliation in Vietnam," 56 *Sierra Club Bull.* 4 (1971).

37. Testimony of Admiral Lemos, Hearings on "Chemical-Biological Weapons," pp. 239-30.

38. See, for example, Baxter and Buergenthal, "Legal Aspects," in *Control of Chemical and Biological Weapons*, p. 16.

39. Arthur Galston, "Defoliants," in *CBW*, ed. Rose, p. 62.

40. Bunn, "Banning Poison Gas," p. 407; Cramer, SPJGW 1945/164, *supra*.

41. Bindschedler-Robert, "Reconsideration," in *Law of Armed Conflicts*, p. 36. To the same effect see *U.S. Army Field Manual 27-10*, para. 37(b).

42. Continuing with the quotation cited in note 6 above, Mr. Nabrit said: "Similarly, the Protocol does not apply to herbicides, which involve the same chemicals and have the same effects as those used domestically in the United States, the Soviet Union and many other countries to control weeds and other unwanted vegetation" (*Documents on Disarmament*, p. 801).

43. Baxter and Buergenthal, "Legal Aspects," in *Control of Chemical and Biological Weapons*, p. 14.

44. The legality of the use of shotguns in international armed conflict was the subject of controversy during World War I. See Oppenheim, *International Law*, ed. Lauterpacht, p. 340, n. 4. Certainly, no one would contend for their legality in international armed conflict solely because they are legal for hunting in most countries.

45. Baxter and Buergenthal, "Legal Aspects," in *Control of Chemical and Biological Weapons*, p. 15.

46. See, for example, Georg Schwarzenberger, *The Legality of Nuclear Weapons* (London: Stevens & Sons, 1958), pp. 37-38.

47. U.N., *CB Weapons*, para. 311. Of course, had the trees been uprooted and destroyed by high explosive shells or aerial bombs, the regrowth period would probably have been equally long. Strangely, no one wept for the millions of coconut palms destroyed by gunfire and aerial bombs in the Pacific during world War II.

48. Galston, "Defoliants," in *CBW*, ed. Rose, p. 63.

49. Fred Warner Neal, "The Nazis Had Their Nuremberg, Americans Will Have Their—Election," 11 *War/Peace Report* 16 (August-September 1971) (review of Albert Speer, *Inside the Third Reich* [New York: Macmillan, 1970]). The report to which Warner refers is Stanford Biology Study Group, *The Destruction of Indochina* (1970).

50. *New York Times*, 29 August 1971, p. 8.

51. See note 23 above and Introduction, p. 17 and n. 37.

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Addendum

At the time that this article was written in 1970, the United States, after half a century, had finally ratified the *1925 Geneva Gas Protocol* although it was not yet in force for this country. However, many of the questions of law with respect to the use of the weapons referred to in the basic article continue to exist. Discussions of some of the developments in these matters will be found in the articles entitled “Nuclear, Chemical, and Biological Weapons” and “Prohibitions and Restrictions on the Use of Conventional Weapons” in the present collection.

In 1976 the General Assembly of the United Nations adopted the *Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification* (better known as the *ENMOD Convention*). This Convention entered into force on 5 October 1978. The United States is a Party.