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Towards the Sixth BWC Review Conference and Beyond: 'Non Lethal' Weapons and Implementation of the Chemical and Biological Weapons Conventions

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It is hard to think of anything with as much potential for jeopardizing the long-term future of the Chemical and Biological Weapons Conventions as the growing interest in creating special exemptions for so-called 'non-lethal' weapons (NLW). The First CWC Review Conference in The Hague earlier this year was opportunity to address the problem constructively. But, save in the national statements of New Zealand, Norway and Switzerland, the OPCW preferred to ignore it. In the programme of Review-Conference follow-up work that is now getting under way, there is no mention of disabling chemicals, not even tear gas, still less the so-called 'calmatives' and other such incapacitating agents in which interest is now reawakening.

The one emerging area of technology that today is most in need of strong and lasting arms control -- biotechnology -- is exactly where new disabling chemicals are coming from, furnishing potential weapons that are tempting some government agencies to depart from or to seek revision of the prohibitions of the CWC. Notions of incapacitating chemical weapons are not new; but, as investment mounts in NLW technologies, it becomes increasingly urgent that the threat they pose to the CWC and BWC regimes be recognised.

In the broadest perspective, as different kinds of technology have arisen, they have also been reflected in the means of war and violence. As new inventions or discoveries come along, they find all kinds of applications, including applications for hostile purposes. The rise of biotechnology, however, poses a special problem, as it will inevitably develop means for manipulating all of the life processes, including cognition, development, reproduction and heredity. Therein lie unprecedented and, in time, widely accessible possibilities for violence, coercion, repression or subjugation.

For example, not so long ago we did not know, but know now, that there are several thousand different kinds of receptor in the human brain. A receptor is a protein molecule within or on the surface membrane of a cell which, when a certain kind of smaller molecule called a ligand binds to it, causes something to happen. Receptors and their ligands are part of the body's immensely complex chemical communication system. One group of receptors in our brains are the opioid receptors. The body manufactures ligands -- enkephalins and endorphins -- that bind with these receptors, variously alleviating pain, inducing sleep, or reducing anxiety. It turns out that these ligands can be imitated by some plant products, one of which is heroin. Also, certain

synthetic chemical analogues of heroin bind to particular opioid receptors, causing diverse effects depending on the chemical, including short-term memory impairment, breathing difficulty and flaccid paralysis. One of these chemicals is fentanyl, which was the basis for the 'knockout gas' used by Russian special forces to rescue several hundred hostages in the Moscow theatre siege of October 2002. The US Army Chemical Corps was studying fentanyl and related chemicals as candidate disabling weapons as early as May 1963.¹

There are innumerable other kinds of receptors in the brain, most of which we know almost nothing about. Of the few that have been investigated, we do know that some can mediate temporary blindness, for example, or can cause submissiveness, or extreme fear. Others affect memory or motivation. As time goes on, we will learn how to do many kinds of things to people with chemicals that bind to brain receptors or interact specifically with other life processes. Many applications will be beneficial. It should be possible to conduct surgical operations with greater ease and safety with the newer anaesthetics that may be made possible by this kind of research. But, as with all major new technologies in the past, this, as well as other branches of biotechnology, will also have potential hostile applications. The challenge, then, is to promote the peaceful and humane applications of the new technology while preventing its exploitation for hostile purposes. Fortunately, the Chemical and Biological Weapons Conventions provide means for protecting the peaceful uses while maintaining and strengthening the barriers to hostile ones.

How do the CWC and BWC keep abreast of technological innovation? They do so in the same way as they cope with the problem of 'dual use', through the 'general purpose criterion' set out in Article II.1(a) and Article VI.2 of the CWC and Article I of the BWC. Instead of prohibiting a particular chemical, or family of chemicals, the CWC prohibits all toxic chemicals except for the listed purposes that it does not prohibit. These listed purposes include "industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes; ... purposes directly related to protection against toxic chemicals ...; military purposes not connected with the use of chemical weapons and not dependent upon the toxic properties of chemicals as a method of warfare; law enforcement including domestic riot control purposes". Toxic is defined in the CWC as anything that is harmful through "chemical action on life processes", whether employed under conditions in which it is temporarily incapacitating or lethal. Some toxic substances that have been considered for use as disabling chemical weapons are even more toxic than the chemicals developed for lethal purposes, in the sense that extremely small amounts are sufficient to cause an effect. Lofentamil, for example, which is a derivative of fentanyl, is far more toxic than nerve agent. It will cause anaesthesia at a dose of 0.025 micrograms per kilogram body weight,² which is hundreds of times smaller than the estimated lethal dose of VX.

The BWC invokes a similar general purpose criterion, prohibiting in Article I "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". The inclusion not only of 'microbial agents' but also of 'toxins', captures such natural substances

¹ *Research contracts from Edgewood Arsenal involving drug testing volunteers, 1966-75*, a submission for the record requested from Lt-Gen R R Taylor [Surgeon General, US Army] following a joint hearing on 10 September 1975 of the Labor and Public Welfare Subcommittee on Health and the Judiciary Subcommittee on Administrative Practice and Procedure, US Senate, 94th Congress, 1st session, *Biomedical and Behavioral Research, 1975*, committee print (1976), pp 169-73. Not yet patented, fentanyl was then known under the cryptonym CS 42251.

² This is the minimum intravenous ED50 for onset of unconsciousness in intubated dogs as reported in L E Mather, "Clinical pharmacokinetics of fentanyl and its newer derivatives", *Clinical Pharmacokinetics*, 8: 422-46 (1983). A figure of 8 µg/kg was quoted for the intravenous LD50 of VX in rabbits in US working paper CD/CW/WP.51 of 29 June 1983, "Preventing illegal production of key precursors of nerve gas".

as those ligands and other naturally occurring bio-active molecules and their chemical analogues that can exert harmful effects on life processes.³ The two Conventions therefore are mutually reinforcing in their prohibition of toxicity as a weapon of war.

Provided the 'general purpose criterion' is implemented properly, it protects the Conventions against obsolescence due to technological advance in biochemistry and biotechnology. When new toxic chemicals are discovered, they automatically come under its purview.

Uniquely, the United States has declared a policy that, in effect, excludes certain chemicals from the 'general purpose criterion', and there is now interest in broadening the exclusion still further. During negotiation of the CWC, some members of the US delegation asserted that 'riot control agents' were not toxic chemicals in the sense of the CWC. This is the position espoused by influential US military lawyers today. And, since 1997, the US Weapons Review Program has been generating the opinion that 'calmative agents' such as the fentanyl are also exempt from the 'general purpose criterion' provided those chemicals are classifiable as 'riot control agents'.⁴ What is being lost sight of here are the grave risks inherent in *any* blanket exemption for *any* toxic chemical.

The first is the escalation hazard. In March 1965, during the Vietnam War, after newspaper stories had been published about US use of 'riot control agents', Secretary of State Dean Rusk in a prepared statement said: "We do not expect that gas will be used in ordinary military operations."⁵ And he did not. Subsequently, however, 25 different types of weapon disseminating the irritant agent CS, including heavy munitions ranging up to 155-mm artillery shell and 750-pound aircraft bombs, were used in Viet Nam. Ultimately more than 15 million pounds of CS were dispensed in these munitions.⁶ A post-war analysis of the operational use of CS declassified in 1979 could find no report of its use against non-combatants or to save civilians and concluded that "...the reduction in casualties has not been in enemy or noncombatant personnel but, rather, friendly troops, as a result of using CS to make other fires more effective."⁷ Thus the United States, whose military is under civilian control and whose vital interests were not at stake in Viet Nam, came to use vast quantities of 'non-lethal' chemical weapons under the pressures of a wartime situation in a manner totally at variance with its initially announced policy.

In World War II, the United States, the Soviet Union and the major European belligerents had around 20,000 metric tons of irritant agents (CA, CN, DA, DC and DM) in their stockpiles

³ Some commentators have interpreted the phrase "other biological agents" contained in BWC Article I(1) as extending the scope of the BWC to any substance capable of acting on life processes, including disabling chemicals. A recent study of the negotiation history of the phrase finds that the negotiators of the BWC intended the expression to capture biological organisms larger than microbes, such as *Schistosoma* blood flukes, hookworms or Colorado beetles. See Emmanuelle Tuerlings, *Dual-use bio-technology: Prospects for governance through arms control*, University of Sussex D Phil dissertation, January 2003, pp 180-88.

⁴ Lt-Col Margaret-Anne Coppernoll [Army National Guard], *Naval War College Review*, Spring 1999, "The nonlethal weapons debate".

⁵ *Department of State Bulletin*, 12 April 1965, pp 528-32, "Secretary Rusk discusses use of tear gas in Viet-Nam".

⁶ Data are from Paul L Howard, *Operational Aspects of Agent CS*, USATECOM Desert Test Center technical report DTC-FR-S700M, April 1973 (regraded unclassified December 1979), AD525499L. Of the munition types, 15 were categorized as tactical CS munitions (and labelled TAC CS) as opposed to riot-control ones (labelled RIOT CS). The total quantity of CS used seems, from Howard's figures, to have been 18.4 million pounds.

⁷ Howard, *op cit*.

but used none in combat.⁸ The line against all chemical weapons was understood, and the line held. During the Korean War, the United States had huge stockpiles of tear-gas munitions. They were never used except in non-combat situations, most notably on rioting detainees in prisoner-of-war camps. Again the line held. The United States did not progress to using lethal chemical weapons during the Vietnam War, despite its use of tactical CS weapons. However, in World War I, lethal chemical warfare began with the use of tear gas. In Manchuria, in Ethiopia and in the Yemen, lethal chemical warfare began with the use of tear gas. In the Iraq-Iran war, it began with tear gas, and half of all the chemical munitions later declared to UNSCOM by Saddam Hussein's Iraq were CS munitions, mainly mortar rounds and aircraft bombs. Every confirmed resort to lethal chemical warfare has started with tear gas.⁹ One major concern regarding any NLW exemption, then, is battlefield escalation – both escalation to other agents and escalation to unrestricted employment.

There is another kind of escalation, which is the fostering of the growth and influence of institutions that are dependent upon the development and weaponization of chemical agents. Such institutions and their associated bureaucracies and dependent communities inevitably become a source of pressure for doing more in this area, and for promoting the assimilation of chemical weapons into the structures and doctrine of state forces.¹⁰

A further danger is that hostile resort to disabling chemicals may lead to a loss of confidence in the CWC regime. Imagine the effect on citizens of the world, and their governments, when they observe war on television and see men fighting in gas masks, see weapons discharging clouds of toxic smoke or sprays of gas. What then will they think of the Convention for the Prohibition of Chemical Weapons, or of the Organization mandated to implement it?

Exemption also risks providing cover for cheating. Inspectors may find a large quantity of toxic chemical munitions and, upon asking what they are for, may be told “law enforcement”; and that, pretty much, would be the end of it. Maybe the inspectors were told the truth, but it does not make compliance verification any easier, and it allows for argument about what is and is not a violation.

Finally, and the most serious difficulty of all, exemption blurs the simple line, *no poisons in war*. The simplicity and lack of ambiguity in this ancient dictum¹¹ make it uniquely a focus for agreement. The importance of averting the hostile exploitation of biotechnology, with its immense potentials for both benefit and harm, is immeasurably more important than the marginal utility of “non-lethal” chemical weapons in military and paramilitary operations. Instead of logic-chopping arguments intended to relax the prohibitions of the CWC and the BWC, we must look to these international agreements as the basis of a clear and generally agreed firebreak against military use in war of all toxic weapons, existing and yet to be devised.

⁸ See, further, J P Perry Robinson, “Disabling Chemical Weapons: A Documented Chronology of Events, 1945-2003”, unpublished, version dated 8 October 2003.

⁹ This seems to be true even for the massive but sparsely reported Spanish use of mustard gas and other chemical weapons in Morocco during 1922-27 – on which historiography has recently advanced: see “The secret history of chemical warfare against Moroccans”, chapter 5 in Sebastian Balfour, *Deadly Embrace: Morocco and the Road to the Spanish Civil War*, Oxford University Press, 2002, pp 123-56.

¹⁰ On which see J P Perry Robinson, “Supply, demand and assimilation in chemical-warfare armament”, in *Military Technology, Armament Dynamics and Disarmament*, edited by Hans Günter Brauch, London: Macmillan Press, 1989.

¹¹ On which see Alva Myrdal, *The Game of Disarmament*, New York: Pantheon, 1976, pp 227-28.