

# Non Lethal Warfare and the Chemical Weapons Convention<sup>1</sup>

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**ABSTRACT:** The 1993 Convention on the Prohibition of Chemical Weapons (CWC) embraces riot control agents (RCAs) and other so-called ‘non lethal’ chemicals within its scope, but among states parties there are divergent interpretations of what the treaty’s prohibitions mean for acquisition and employment of disabling chemicals for the particular purpose of law enforcement. That the CWC should have given rise to such divergence is viewed in this paper as a fault line within the chemical-weapons (CW) disarmament and non-proliferation regime. Growing investment in ‘non lethal’ weapons (NLW) technology may be leveraging that fault-line into a fissure. The October 2002 use by Russian special forces, not of an RCA, but of an opioid ‘knockout gas’ to rescue hostages taken by Chechen separatists in a Moscow theatre has compelled attention to the problem of divergent interpretations, for there had been no previous report of any such weapon being used anywhere. The episode signified emergence of a novel category of chemical weapon – the category of post RCA counter-terrorist chemical weapons – at a time of movement towards a CW-free world. The paper traces the problem to its roots and discusses it in the light of evolving state practice. It proposes that the OPCW Scientific Advisory Board be tasked to report on the meaning of the word ‘toxic’, and that an OPCW policy organ establish an open-ended working group to consider guidelines for resolving practical problems arising from the ‘law enforcement’ exemption set forth in CWC Article II.9(d).

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## ***The problem***

Belligerent armed forces in recent wars, allied ones among them, have had rules of engagement differing substantially in regard to employment of ‘riot control’ chemical agents. What this has meant in practice has, for the most part, been invisible to onlookers, but the policy divergence that the differences embody is being widened and aggravated by today’s mounting interest in ‘non lethal weapons’ (NLW)<sup>2</sup> and also has heavy international ramification in that means for resolving it are being advocated that would loosen constraints set by provisions of the 1993 Chemical Weapons Convention (the CWC).<sup>3</sup> An unwillingness has long been evident among CWC states parties to address the advocacy head on, or even to consider the issue collectively as some proposed during the First CWC Review Conference in 2003.<sup>4</sup> This is permitting – some would say promoting -- a *de facto* legitimization of chemical NLW, thereby fragmenting and, it is to be feared, weakening the CWC prohibition of all chemical weapons. The Second CWC Review is now upon us, and, with that creeping legitimization possibly in train, it seems no longer prudent to let the divergence remain in the too-difficult-to-deal-with category.

The Chemical Weapons Convention expressly exempts from its prohibitions the use of toxic chemicals for “[l]aw enforcement including domestic riot control purposes”. The negotiators created this exemption in order to allow police use of tear gas to continue uninhibited by their treaty. However, the “including” in those italicized words ordinarily conveys the meaning that ‘domestic riot control’ is to be seen as a subset of ‘law enforcement’, taking its place alongside other subsets that comprise forms of law enforcement other than domestic riot control. This in turn could be taken to mean that any toxic chemical suited to those other forms of law enforcement would become exempt from the treaty prohibitions when used or when intended to be used for law-enforcement purposes.<sup>5</sup> Examples of what other forms of law enforcement might be were given to the Committee on Foreign Relations of the US Senate by the US CWC negotiating ambassador, Stephen Ledogar, in May 1992: “We understand the language ‘law enforcement including domestic riot control’ to mean that domestic riot control is a subset of law enforcement activities. We understand other law enforcement activities to include: controlling rioting prisoners of war; rescuing hostages; counterterrorist operations; drug enforcement operations; and

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<sup>2</sup> In current NATO terminology, ‘non-lethal weapons’ are ones that “are explicitly designed and developed to incapacitate or repel personnel, with a low probability of fatality or permanent injury, or to disable equipment with minimal undesired damage or impact on the environment”. This definition is set out in the document *NATO Policy on Non-Lethal Weapons* adopted by the North Atlantic Council on 27 September 1999.

<sup>3</sup> For a snapshot of this advocacy and associated non-governmental debate, see the entry for 5-6 December 2000 in the News Chronology section of *The CBW Conventions Bulletin* no 51 (March 2001), p 35, which reports the fourth Jane’s conference, in Edinburgh, on ‘non lethal’ weapons, *NLW 2000*. *The CBW Conventions Bulletin*, which is the quarterly journal of the Harvard Sussex Program on Chemical and Biological Weapons, is accessible via <[www.sussex.ac.uk/Units/spru/hsp](http://www.sussex.ac.uk/Units/spru/hsp)>, which is the HSP website.

<sup>4</sup> See, for example, the statement by Switzerland during the general debate at the start of the First CWC Review Conference. It is excerpted in the second entry for 28 April in the News Chronology section of *The CBW Conventions Bulletin* no 60 (June 2003), p 49.

<sup>5</sup> Provided the chemical was not one that the Convention expressly precludes from any such consideration. Thus, according to the CWC Verification Annex, at IV.2(a), no chemical that is listed on Schedule 1 of the CWC Annex on Chemicals may be applied to anything other than “research, medical, pharmaceutical or protective purposes”. The Convention, at Article II.1(a), also requires that the chemical be of a type and in a quantity consistent with the law-enforcement purpose.

noncombatant evacuation.”<sup>6</sup> Ambassador Ledogar made no comment, however, on the particular chemicals that could or could not be regarded as suited to law enforcement, nor has the US Government done so since then. Rightly or wrongly, its stance is seen to be one of preserving options in preference to closing them off.

In contrast, the governments of other countries, including EU member states such as the UK, have put forward explicit views on this point. For example, in December 1992, just as it was preparing to lead the signing of the CWC by the UK, the British Foreign and Commonwealth Office stated to Parliament that the Convention entitles states parties “to use toxic chemicals for law enforcement, including domestic riot control purposes, provided that such chemicals are limited to those *not listed in the schedules to the convention and which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure*”.<sup>7</sup> Those italicized words replicate almost verbatim the words that the Convention uses in Article II.7 to define ‘riot control agent’ (RCA). So, on this UK interpretation, law enforcement purposes do indeed include riot control purposes as a subset, but RCAs are the only toxic chemicals that may be used for law enforcement purposes.

From Germany, whose Permanent Representative to the Geneva disarmament conference, Ambassador Dr Adolf von Wagner, led the CWC negotiation during its final year, close legal argument has been put forward in favour of the exclusionary interpretation espoused by the British government.<sup>8</sup> It draws from the 1969 Vienna Convention on the Law of Treaties, Article 31 of which sets out general rules for interpreting treaties. Here it is stated that interpretation shall be in accordance with the ‘ordinary meaning’ of terms used in the treaty *in the light of its object and purpose*. An interpretation that tended to legitimize the development, production and stockpiling of antipersonnel chemicals having physiological effects quite different from those of the police-issue tear gases that had been in civil use since before the First World War would, it was argued, be in conflict with the object and purpose of the CWC and must therefore be wrong. Moreover, the CWC Preamble declares that the purpose of the Convention is, “for the sake of all mankind, to exclude completely the possibility of the use of chemical weapons”, which is a clear avowal that people should look to the CWC to protect them from any hostile use of harmful chemicals. American jurists, although not ones speaking for the US Government, have argued similarly. The late Abram Chayes, for example, concluded that it “would be both harmful and incorrect” to claim that activities involving any toxic chemical not listed

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<sup>6</sup> Ambassador S Ledogar, written response to questions asked on 1 May 1992. See: USA, 102d Congress, 2<sup>nd</sup> Session, Senate, Committee on Foreign Relations, hearing, 1 May 1992, *Chemical Weapons Ban Negotiation Issues*, S.Hrg.102-719, USGPO, 1992, pp 34-35.

<sup>7</sup> UK Foreign & Commonwealth Office Minister of State Douglas Hogg, written response to a Parliamentary question from Mr Macdonald addressed to the Secretary of State for Foreign and Commonwealth Affairs, 7 December 1992, *Hansard (Commons)* vol 215 no 89 cols 461-62.

<sup>8</sup> Dr Walter Krutzsch, personal communication, 1 March 2003. See the paper, “‘Non-lethal’ chemicals for law enforcement”, that he presented at the 19th Workshop of the Pugwash Study Group on Implementation of the Chemical and Biological Weapons Conventions, *The First CWC Review Conference and Beyond*, Oegstgeest, the Netherlands, 26-27 April 2003. And see Adolf von Wagner, “Keynote Address: The handling of toxic chemicals for law enforcement purposes, including domestic riot control purposes within the Chemical Weapons Convention”, *Open Forum on the Chemical Weapons Convention* [The Peace Palace, The Hague, 1 May 2003], posted at [www.sussex.ac.uk/Units/spru/hsp/OpenForumCWC.pdf](http://www.sussex.ac.uk/Units/spru/hsp/OpenForumCWC.pdf). See, further, Walter Krutzsch, “‘Law enforcement including domestic riot control’: the intent of the CWC negotiators” presented at the 26<sup>th</sup> Workshop of the Pugwash Study Group on Implementation of the CBW Conventions, *10 Years of the OPCW: Taking Stock and Looking Forward*, Noordwijk, the Netherlands, 17-18 March 2007.

on Schedule 1 could be justified as permitted law enforcement.<sup>9</sup> Other US legal experts have argued a contrary interpretation.<sup>10</sup>

The fact that state practice prior to the Moscow theatre siege of October 2002 seemed not to conflict with either interpretation perhaps explains why OPCW member states had made no attempt to resolve the ambiguity that the two contrasting interpretations created. However, as in the variant military rules of engagement concerning RCA employment, it is an ambiguity that will surely become increasingly fraught as time advances, especially as scientific understanding of life processes continues to expand and, more especially, as that new knowledge further encourages notions of ‘non lethal’ warfare and ‘non lethal’ weapons technology.<sup>11</sup> Proponents of ‘non lethal’ technology have been vigorous in their advocacy of it, laying stress on the humanitarian attractions of “war without death”, or at least of war with fewer deaths. The down side is less emphasized. Are we really to expect that no one will (a) contrive to manipulate life processes through this new science in a manner that does not threaten life itself but instead provides new capacity for repressing, subjugating or coercing selected populations; (b) portray as law-enforcement at least some of the new forms of social control thus made available; and/or (c) exploit the applicability to hostile purposes of readily available law-enforcement chemicals? Of course not. Yet those are eventualities that most of us have apparently preferred not to contemplate.

The lure of non-lethality may thus be opening up a fault line that has always existed in the CWC regime, one that is manifest in the co-existence of the two contrasting interpretations of the law-enforcement exemption. On the one hand the US government interpretation, which seems to presuppose the acceptability of a wide range of ‘law enforcement’ chemicals for counter-terrorist and other such purposes. On the other hand a European interpretation that closes the door on any law-

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<sup>9</sup> Abram Chayes and Matthew Meselson, “Proposed guidelines on the status of riot control agents and other toxic chemicals under the Chemical Weapons Convention”, *Chemical Weapons Convention Bulletin* no 35 (March 1997) pp 13-18. The only law-enforcement exception to the RCA-only rule that Chayes admitted was use of a chemical other than an RCA “in accordance with the decision of a duly constituted tribunal”.

<sup>10</sup> Notably David P Fidler. See, especially, his “The meaning of Moscow: ‘non-lethal’ weapons and international law in the early 21<sup>st</sup> century”, *International Review of the Red Cross*, vol 87 pp 525-52, September 2005.

<sup>11</sup> On possible relationships between advances in the life sciences and novel disabling chemical weapons, see especially: The Committee for National Security, *Banning non-lethal chemical incapacitants in the Chemical Weapons Convention: A briefing discussion* [on 20 February 1992] with Dr Matthew Meselson (Washington, DC, 1992); Malcolm Dando, *A New Form of Warfare: The Rise of Non-Lethal Weapons* (London: Brassey’s, 1996); Malcolm Dando, *The New Biological Weapons: Threat, Proliferation, and Control* (Lynne Rienner, 2001); M R Dando, “Future incapacitating chemical weapons: the impact of genomics”, in N Lewer (editor), *The Future of Non-Lethal Weapons: Technologies, Operations, Ethics and Law* (London: Frank Cass, 2002); Mark Wheelis, “Biotechnology and biochemical weapons”, *The Nonproliferation Review*, Spring 2002, pp 48-53; T Bartfai and Å Sellström, “Neurobiology, weapons, humanity”, presentation at the ICRC Symposium on Biotechnology, Weapons and Humanity, Montreux, 23 September 2002; Malcolm R Dando, “The danger to the Chemical Weapons Convention from incapacitating chemicals”, in Graham Pearson and Malcolm Dando (editors), *Strengthening the Chemical Weapons Convention: First CWC Review Conference Paper* [University of Bradford: Department of Peace Studies] no 4, March 2003; Mark Wheelis, “Will the new biology lead to new weapons?”, *Arms Control Today* vol 34 no 6, July-August 2004; Mark Wheelis and Malcolm Dando, “Neurobiology: A case study of the imminent militarization of biology”, *International Review of the Red Cross* vol 87 no 859, September 2005, pp 553-71; Alexander Kelle, Kathryn Nixdorff and Malcolm Dando, *Controlling Biochemical Weapons: Adapting Multilateral Arms Control for the 21<sup>st</sup> Century* (Basingstoke: Palgrave Macmillan, 2006); and Alan Pearson, “Incapacitating Biochemical Weapons: Science, Technology, and Policy for the 21<sup>st</sup> Century”, *Nonproliferation Review* vol 13 no 2 (July 2006) pp 151-88.

enforcement application of toxic chemicals other than RCAs as defined by the Convention. The international context for these contrasting interpretations is one in which RCAs are held and often used by the forces of state in more than a hundred countries,<sup>12</sup> and in which counterterrorism requirements, including ones now associated with the ‘Global War on Terrorism’, have been creating demand for chemical agents more powerful than regular police-issue RCAs.<sup>13</sup>

### ***Salient history***

Remedies to the problem need to be found. The problem is structured and conditioned by its past, so, for guidance on remedies, we should first look to history. Three aspects seem especially salient. First, there are the technological antecedents, including the growth of institutional linkage between the early irritant agents (‘tear gas’) on the one hand and, on the other, the later drug-like psychotropic agents that offered weapons-designers additional forms of low-mortality incapacitation or disablement. Second, there is the negotiating history of how the law-enforcement provisions of the CWC emerged from the wider negotiation on elimination of chemical weapons and from the changing context of those long-drawn-out (1973-1992) intergovernmental talks. It is convenient to consider this negotiating history in two strands: how the CWC came to be drafted the way it is in regard to tear gas and other RCAs, and how this culminated in the perplexing provisions on ‘law enforcement’. Finally, there is the re-emergence in the 1990s of the old science-fiction idea of “war without death” – of fighting forces equipped with ‘non lethal’ weapons, of which the frontrunners then were chemical, not so much the old tear gases but more the newer ‘incapacitating agents’. What effects may the political perturbations associated with this re-emergence have had on the context of the CWC, both its negotiation and its implementation? That final element of our historical inquiry will later take us into consideration of recent state practice, from which possible remedies to the problem may then become evident.

### ***Technological antecedents***

The archetypal law-enforcement chemicals are the tear gases used by police forces in situations where firearms or cavalry would previously have been employed instead. In the form of ethyl bromoacetate brought to the front in rifle cartridges and hand grenades by a Paris policeman in August 1914, these sensory irritants were the first chemical weapons to be used during the Great War of 1914-18. Thereafter many other irritant chemicals were employed for harassment of enemy forces on the battlefield, chiefly to force people out of otherwise protective trenches and to upset the fire coordination of artillery batteries. At the close of a war that also saw massive employment of more deadly chemicals, some of the new military irritants or ‘harassing agents’ found their way into police service in a growing number of

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<sup>12</sup> The annual report for 2000 of the Organization for the Prohibition of Chemical Weapons (the OPCW), which oversees implementation of the CWC, records that 99 of its member states had declared possession of RCAs. See OPCW document C-IV/5 dated 17 May 2001. Prominent non-members of the OPCW include Egypt, Iraq, Israel and Syria, all of which have used RCAs for law enforcement purposes.

<sup>13</sup> Writing in 2001 (i.e. before the Moscow theatre siege) about the “marginal” effectiveness of the CS gas widely used by the Israel Defence Force, a retired officer of the IDF referred to “‘sleeping gas’, an aerosol dispersed gas that induces fatigue and sleep”. Its effects, he went on to say, “depend on weather conditions”. See: David Eshel, *Jane’s Intelligence Review*, September 2001, pp 46-47, “Israel investigates non-lethal options”.

countries, this process being stimulated by post-war social unrest (in Pittsburgh, notably).<sup>14</sup> This was when the expression ‘riot control agent’ or RCA entered currency. It was used for chemicals such as the chlorinated phenacyl compound known as Agent CN and the arsenical known as adamsite or Agent DM. Such a cycling of aggressive but rarely lethal chemicals from the civil sector to military use and back again repeated itself throughout subsequent decades,<sup>15</sup> constrained though it was by the 1925 Geneva Protocol, which outlawed the initiatory use in war of biological or chemical weapons including tear gas.<sup>16</sup> This cycling was evident for the later irritants Agent CS,<sup>17</sup> Agent OC and Agent CR. To a lesser and altogether more hidden extent, it was also the case with certain chemicals that can incapacitate through mechanisms other than sensory irritation.<sup>18</sup> The 1960s, which, because of the rise of counterinsurgency theory and practice, were a period of unprecedented military interest in such disabling chemicals as Agent BZ and TL2636,<sup>19</sup> also saw growing attention by the police and other civil forces of state to such drugs as those two just-mentioned military incapacitants. By no means was this interest confined, as today’s literature tends rather to imply, to America and Britain. Fast-acting anaesthetics, to take one example, were seen as a means for stopping criminals who might otherwise escape arrest, rather as veterinarians or hunters used them with dart guns for the capture of large animals. And the idea of ‘calmatives’ began to enter the literature on “crowd control chemicals”. This confluence in law enforcement of chemical irritants and incapacitating chemicals (which together we here call ‘disabling chemicals’) had obvious implications for the scope of the then-projected CWC. The UK draft CWC of August 1976, for example, sought to exempt altogether from its scope disabling chemicals whose duration of action did not exceed approximately 24 hours<sup>20</sup> – an

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<sup>14</sup> Daniel P Jones, “From military to civilian technology: the introduction of tear gas for civil riot control”, *Technology and Culture* vol 19 no 2 (April 1978) pp 151-68. On tear gas generally, a recent detailed text is Eugene J Olajos and Woodhall Stopford (editors), *Riot Control Agents: Issues in Toxicology, Safety, and Health* (CRC Press, 2004).

<sup>15</sup> This cyclical process is documented in J P Perry Robinson, “Disabling chemicals: some technical and historical aspects”, a paper presented at the 2<sup>nd</sup> Workshop of the Pugwash Study Group on Implementation of the CBW Conventions, The Hague and Noordwijk, the Netherlands, 27-29 May 1994.

<sup>16</sup> R R Baxter and Thomas Buergenthal, “Legal aspects of the Geneva Protocol of 1925”, *The American Journal of International Law* vol 64 (1970) pp 853-79.

<sup>17</sup> The history of Agent CS as an RCA dates from the late 1950s, when the UK introduced this ‘super tear gas’ into places such as Cyprus and British Guiana for colonial policing. In the Vietnam War, US forces began using it in 1965, Secretary of State Dean Rusk in March of that year expressing the expectation that CS would not be used in ordinary military operations but “only in those situations involving riot control or situations analogous to riot control”. That was not to be. Once CS had got into battle, all such restraints disappeared. It was used just as its antecedents had been used during the Great War, to harass: to deny terrain, to drive people out of protective cover, and to discoordinate enemy activity. Some 8,000 tons of the chemical were shipped to the war zone and mostly consumed there [Paul L Howard, *Operational Aspects of Agent CS*, USATECOM Desert Test Center technical report DTC-FR-S700M, April 1973]. So far as can be ascertained, there exists not even one after-action report indicating successful use of CS in coping with the ‘intermingled’ combatant/noncombatant situation for which its employment had originally been advocated. See further Robinson, *supra* note 15.

<sup>18</sup> See, for example, B Witten, “Nonlethal agents in crime and riot control”, US Army Edgewood Arsenal Technical Memorandum EATM 133-1, July 1968 [AD392476].

<sup>19</sup> Caitriona McLeish and J P Perry Robinson, “Candidate Agent TL2636: A Cautionary Tale for the General Purpose Criterion”, a paper presented at the 15th workshop of the Pugwash Study Group on Implementation of the CBW Conventions, *Approaching the First CWC Review Conference*, Oegstgeest, the Netherlands 23-24 June 2001.

<sup>20</sup> UK Delegation to the Conference of the Committee on Disarmament, *Draft Convention on the Prohibition of the Development, Production and Stockpiling of Chemical Weapons and on Their*

approach which, it soon transpired, fell foul of the technical realities of toxicological cause and effect, especially in situations, such as battle, where dosage was controllable only within broad limits. Come 1991, when the Chemical Weapons Convention was clearly imminent, one prominent country had chosen to pursue development of military incapacitating chemical weapons under the designation Advanced Riot Control Agent Devices, or ARCAD.<sup>21</sup> By that time the concept of counterterrorist chemical weapons was establishing itself within the planning and procurement programmes of several countries, and all these additional roles for disabling chemicals were complicating the end-game in the negotiation of the Chemical Weapons Convention.

### ***Treatment of Riot Control Agents in the CWC negotiation***

When intergovernmental talks on what would later become the CWC began in Geneva in the early 1970s, the concept of chemical incapacitants soon became familiar to all participants. One of the basic international texts of the time – *Health Aspects of Chemical and Biological Weapons* (WHO, 1970) – differentiated ‘lethal’, ‘incapacitating’ and ‘harassing’ agents, and, observing in a footnote that “[n]o sharp line of demarcation can be drawn between lethal and incapacitating agents”, provided these definitions:

- *An incapacitating agent is one intended to [...] induce temporary mental or physical disability, the duration of which greatly exceeds the period of exposure.*
- *A harassing agent (or short term incapacitant) is one capable of causing a rapid disablement that lasts for little longer than the period of exposure.*

It is the ‘harassing agent’ category that corresponds to what the CWC now calls ‘riot control agents’. However, throughout most of the period during which the CWC was under negotiation in Geneva, and notwithstanding various national papers on incapacitants, reference to RCAs existed chiefly inside the square brackets or in the footnotes of the rolling text of the draft Convention whereby delegations reserved their positions or entered conditions or alternative language for later resolution. It was not until the final months that RCAs emerged from this limbo. In fact the issue, and how to resolve it, had long been bottled up within the Western Group, where there was persistent disagreement on the subject.

The nature of that disagreement is apparent from the evidence received by the US Senate Foreign Relations Committee from Ambassador Stephen Ledogar on 1 May 1992, at a time when the negotiation still had more than three months to run.<sup>22</sup> In his written testimony, Ambassador Ledogar stated that, in contrast to the “offensive military purposes” that had been excluded from US weapons-employment policy since 1975 (when the United States ratified the 1925 Geneva Protocol), “there are quite legitimate uses for non-lethal chemicals for law enforcement[,] in defensive military modes and to save lives in a variety of circumstances. We are not prepared to rule out these uses under a CW convention.” During his oral testimony he said, with

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*Destruction*, 28 July 1976, as in document CCD/512 dated 6 August 1976. The 24-hour criterion is to be found in that part of the UK Commentary [Foreign & Commonwealth Office, 2 November 1976] on the Draft Convention addressing Article I(a), which read: “lethal chemical agents and other toxic chemical agents (of a nature and intended primarily to cause long-term physiological harm to human beings), of types and in quantities that have no justification for protective or other peaceful purposes”.

<sup>21</sup> USA, Department of the Army, Descriptive Summaries of the Research, Development, Test and Evaluation Army Appropriation: Supporting Data Amended FY 1992/FY 1993 Biennial Budget Estimate, DA PAM 5-6-1, submitted to Congress - January 1992 [AD-A247 523], pp 142 and 311.

<sup>22</sup> USA, 102d Congress, 2<sup>nd</sup> Session, Senate, Committee on Foreign Relations, hearing, 1 May 1992, *Chemical Weapons Ban Negotiation Issues*, S.Hrg.102-719, USGPO, 1992.

striking candour: “My current instructions propose that riot control agents simply be defined out of the convention, not included.<sup>23</sup> That position has not gained a lot of support. The majority position would take the opposite side and would have riot control agents defined in and therefore covered by all of the provisions [...]. Now, at present the United States is reviewing my instructions on riot control agents, I am told, to see whether some compromise between the two extremes that are on the table now in Geneva might be reached.”

The opinion was by now being heard in Geneva that RCAs were categorically different from other chemical agents because they did not ordinarily kill. However, since the (second) Ekéus rolling text of 1987/88,<sup>24</sup> there had been language in the draft Convention defining a ‘toxic chemical’ as one “*which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals*”. This language later emerged from its square brackets and now lives on in Article II.2 of the Convention. RCAs might not often kill but they could undoubtedly bring about “temporary incapacitation”, at least on the ordinary meaning of that phrase. It was difficult, therefore, to deny that RCAs were ‘toxic chemicals’ within the meaning of the treaty. In retrospect it seems that those who wished to define RCAs out of the Convention simply did not engage in debate on whether the physiological effects of RCAs could or could not properly be attributed to ‘toxicity’. In public (though perhaps not within the privacy of the Western Group) these people simply ignored the question. Privately, they let it be known that the ‘temporary incapacitation’ proposed as one of the three defining characteristics of ‘toxic chemicals’ was intended only to convey the action of chemical incapacitants such as Agent BZ; it was not intended to convey the action of riot control agents. But here most other people in Geneva saw a hair-splitting that was not acceptable. Ambassador Ledogar was correct in reporting that it had “not gained a lot of support”.

The majority view among the delegations that expressed themselves was that RCAs should be handled, not by blanket exemption, but by treating them as another category of ‘dual use’ toxic chemical. Right back to the start of the pre-negotiation exploratory talks on chemical weapons in the 1970s, the Geneva participants had appreciated that many toxic chemicals and their precursors had beneficial applications that no disarmament treaty should be allowed to obstruct. Thus, the leading killer gas of the Great War, phosgene, was nowadays extensively used as an industrial intermediate, as in the manufacture of certain plastics. Nitrogen mustards that could be employed as vesicant chemical-warfare agents also had application in cancer chemotherapy. Dimethyl methylphosphonate serves widely as a flame retardant, notably in thermal insulating materials used in house-building, but it is also rather easily convertible into nerve gas. A great many more such examples can be cited,

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<sup>23</sup> Thus the US draft CWC [CD/500 dated 18 April 1984] had included the following language in its definition of ‘chemical weapons’: “super-toxic lethal, other lethal, and other harmful chemicals, and their precursors, except for these chemicals intended solely for permitted purposes as long as the types and quantities involved are consistent with such purposes and except for those chemicals which are not super-toxic lethal, or other lethal, chemicals and which are used by a Party for domestic law-enforcement and riot control purposes or used as a herbicide”. A strong echo of this exclusionary language occurs in the proviso that appeared soon afterwards inside square brackets in the (first) Ekéus rolling-text [in CD/539] of 28 August 1984: “The term ‘chemical weapons’ shall not apply to those chemicals which are not super-toxic lethal, or other lethal chemicals and which are used by a Party for domestic law-enforcement and domestic riot-control purposes”. This square-bracketed proviso remained in the draft Convention until the von Wagner vision text [CD/CW/WP.400] of 18 May 1992. The Australian draft [CD/1143] of 12 March 1992 incorporated a version of it.

<sup>24</sup> In CD/795 dated 2 February 1988.



among them the ‘dual use’ character of Agent CS either as a riot control agent in the hands of police forces or as an aggressive weapon for military forces, as during the Vietnam War. The negotiators had accordingly long since realised that they would have to find some way of dealing with the ‘dual use’ problem, whether it concerned pharmaceuticals, industrial intermediates, law enforcement or anything else.

This they did by defining ‘chemical weapons’, not in terms of chemical structure or physical characteristics, but in terms of the intended purpose of use. They had the treaty define ‘chemical weapons’ as covering all “*Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes*”. A holding of a toxic chemical that did not satisfy this ‘general purpose criterion’ was to be regarded as a holding of a chemical weapon – subject, therefore, to the prohibitions laid down in the CWC. This device entered the draft treaty right from its inauguration in the 1983 McPhail text.<sup>25</sup> In the form just quoted it lives on in Article II.1(a) of the Convention. Those “purposes not prohibited” the negotiators decided expressly to define in the rolling text. The language<sup>26</sup> they sought to use remained in a state of flux for many years and was not finalized until the last days of the negotiation. It was easy enough to agree to list “agricultural, research, medical, pharmaceutical or other peaceful purposes”, but much beyond that remained controversial. Above all, the ‘law enforcement’ purposes referred to inside square brackets in the 1991/92 Batsanov rolling text<sup>27</sup> and its seven predecessors, resisted consensus on the more specific language it would need in order to embrace riot control purposes to the satisfaction of all delegations. Today’s contrasting interpretations of the text as agreed in August 1992 indicates that the final consensus was far from satisfactory, save perhaps to any delegations that, for their own reasons, had deliberately sought ambiguity.

### ***The endgame on law enforcement in the CWC text***

It is instructive to observe the twists and turns of the end-game negotiation on RCAs and on law-enforcement as a set of chronologies, for these can make it easier to spot why the language ended up as it did and therefore how today’s problem was created.<sup>28</sup> Here, first, is a chronology on how the ‘law enforcement’ language within

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<sup>25</sup> In CD/416 dated 22 August 1983. An early proposal for use of the criterion is to be found in a US working paper, *Work program regarding negotiations on prohibition of chemical weapons*, CCD/360 dated 20 March 1972: “The Biological Weapons Convention relies on a general formula which prohibits agents ‘of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes’. This definition is both comprehensive and simple. Such a definition by itself, however, could be insufficiently precise for effective application to chemicals which are produced in extremely large quantities for peaceful purposes.”

<sup>26</sup> The language originated in the work of the bilateral USA-USSR working group on chemical weapons of the late 1970s. See, for example, the bilateral progress report of 7 August 1979, CD/48, which includes the following: “The two sides believe that the scope of the prohibition should be determined on the basis of a general purpose criterion. [...] 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.” In a proposal put forward by the USSR alone in 1982, “non-hostile purposes” were broadened to mean “industrial, agricultural, research, medical or other peaceful purposes, law enforcement purposes or purposes directly connected with protection against chemical weapons”; see Conference on Disarmament document CD/294 of 21 July 1982.

<sup>27</sup> In CD/1116 dated 20 January 1992.

<sup>28</sup> I owe this idea of chronological ordering to Walter Krutzsch, from whose own application of the idea – “Documents Related to ‘Law Enforcement and Non-Lethal Chemicals’”, annex to the 1 March 2003

the definition of ‘purposes not prohibited’ evolved under the guidance of Ambassador von Wagner into what is now Article II.9(d):

- 20 January 1992: “*Domestic law enforcement and riot control purposes.*” (Batsanov rolling text in CD/1116)
- 18 May 1992: “*Domestic law enforcement and domestic riot control.*” (von Wagner vision text, CD/CW/WP.400)
- 22 June 1992: “*Law enforcement including domestic riot control purposes*” (von Wagner chairman’s text, CD/CW/WP.400/Rev.1\*)
- 10 August 1992: “*Law enforcement including domestic riot control purposes*” (the draft CWC that the CD subsequently agreed, CD/CW/WP.400/Rev.2)

This ‘dual use’ solution to the RCA problem evidently constituted the second of the “two extremes” that Ambassador Ledogar had told the US Senate Foreign Relations Committee about on 1 May 1992. The “compromise” he said he anticipated being instructed to seek eventually resulted in a CWC text which, alongside the dual-use solution just outlined, also incorporated a prohibition of the use of RCAs as a method of warfare.

Language for such a prohibition was put forward in one of the eight papers tabled by members of the Group of 21 Neutral and Non-Aligned States plus China that proposed changes to the ‘vision text’ of Ambassador von Wagner. The paper, tabled by eleven members of that political grouping,<sup>29</sup> proposed a package that would also have outlawed herbicide warfare as well as including certain other elements that the Western Group had been resisting. The emergence of what is now Article I.5 of the CWC was as follows:

- 4 June 1992: “*Each State Party undertakes not to use herbicides, law enforcement and riot control agents as a method of warfare; such a prohibition should not preclude any other use for purposes not prohibited under this Convention. \* // \*All other references to riot control agents in CD/CW/WP.400 will be deleted consequent to this provision. //*” (11-country proposal in CD/CW/WP.403)
- 22 June 1992: “*Each State Party undertakes not to use riot control agents as a method of warfare.*” (von Wagner chairman’s text, CD/CW/WP.400/Rev.1\*)
- 10 August 1992: “*Each State Party undertakes not to use riot control agents as a method of warfare.*” (the draft CWC that the CD subsequently agreed, CD/CW/WP.400/Rev.2)

Not apparent in the public record is why the Eleven Countries proposal came to present prototype language for Article I.5. Regarding the revised language contained in the Chairman’s Text of 22 June, Ambassador Ledogar subsequently informed the Senate Foreign Relations Committee (in a written response for the record) that Ambassador von Wagner had “recently stated to the press that this text permits the use of riot control agents to ‘rescue downed pilots and to stop rioting prisoners of war’”, observing also that Ambassador von Wagner had taken his examples directly from US Executive Order 11850 of 1975 (on which see below).<sup>30</sup> The German delegation itself reportedly shifted its position away from supporting the US contention that EO 11850 was compatible with the new language, thereby espousing the British position that there was no compatibility between the language and certain

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version of his paper “‘Non-lethal’ chemicals and law enforcement including riot control” -- I have extracted many of my entries here.

<sup>29</sup> Algeria, China, Egypt, India, Iran, Kenya, Mexico, Myanmar, Pakistan, Sri Lanka and Zaïre, *Article I: general provisions on scope*, CD/CW/WP.403 dated 4 June 1992.

<sup>30</sup> S.Hrg.102-719, p 34. It seems that neither press-reporting nor transcript exists of any such press statement.

of the RCA uses authorized under the Executive Order -- thus, according to a later US account of the negotiation, presenting a dilemma for the United States.<sup>31</sup> As finally agreed, the Article I.5 language conveyed the implication that RCAs were somehow different from all the other chemicals that the Convention covered, for why else should their use as a method of warfare be singled out for special prohibition? Ambassador Ledogar made this very point during the subsequent CWC-ratification hearings in the US Senate,<sup>32</sup> and it lives on in US official reviews of the subject.<sup>33</sup> A contrasting response to the question is that Article I.5 was belt-and-braces drafting: that its inclusion was necessitated by the enormous combat use of RCAs during the Vietnam War and hence the obligation upon the drafters to make it unambiguously clear that there should be no repetition of any such use in the future. The Krutzsch and Trapp *Commentary* observes that “the prohibition under paragraph 5 of Article I on the use of riot control agents as a method of warfare *becomes a clarification, rather than a limitation*, of paragraph 1 of the same Article”.<sup>34</sup> For its part, the US negotiating delegation stated that “the US has accepted the ban on the use of riot control agents as a method of warfare with the following understandings: domestic riot control is a permitted activity; riot control agents may be used in defensive military modes to save lives; and the use of chemicals for law enforcement activities is permitted.”<sup>35</sup>

Just as the Article I.5 prohibition of the use of RCAs as a method of warfare and the Article II.9(d) ‘law enforcement’ exemption first appeared in the Chairman’s text of 22 June, so too did the Article II.7 language defining ‘riot control agent’: “*Any chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.*” It may be inferred that all three (and probably a fourth one too) are elements of an agreement reached during May/June 1992, which was a period of consultations on RCAs facilitated by a Friend of the Chair appointed for the purpose, Dr Graham Cooper of the United Kingdom.

Ambassador Ledogar’s compromise had one further, especially elusive, element: the provisions to be set out in the CWC for declaring law-enforcement chemicals to the OPCW alongside the declaration provisions for the ‘scheduled’ chemicals. Some such declaration was essential, otherwise a dangerous area of non-transparency would exist within the treaty’s compliance-monitoring system. What became Article III.1(e) emerged as follows:

- 18 May 1992: “*With respect to domestic riot control and domestic law enforcement: (a) Specify the name, structural formula and Chemical Abstract*

<sup>31</sup> Major Ernest Harper, “A call for a definition of method of warfare in relation to the Chemical Weapons Convention”, *Naval Law Review*, vol 48 (2001) pp 132-160 at pp 134-38.

<sup>32</sup> See the second entry for 13 April 1994 in the News Chronology section of *The CBW Conventions Bulletin* no 24 (June 1994), pp 23-24.

<sup>33</sup> See, for example, Margaret-Ann Copernoll [Lt-Col, US Army National Guard], *Naval War College Review*, Spring 1999, “The nonlethal weapons debate”. In the steadfastness of US resolve to depict RCAs as not chemical weapons, one is reminded of the persistence with which the UK government argued, during 1970 to about 1973, that Agent CS was categorically different from other tear gases and therefore lay outside the scope of the 1925 Geneva Protocol. See D Carlton and N A Sims, *Survival* vol 13 no 10 (October 1971), “The CS Gas Controversy: Great Britain and the Geneva Protocol of 1925”. UK state papers on that sorry episode are starting to enter the public domain: see files CAB 128/44, CAB 129/146 and FCO 66/221 in the UK Public Record Office (now The National Archive), Kew.

<sup>34</sup> W Krutzsch and R Trapp, *A Commentary on the Chemical Weapons Convention*, Dordrecht: Nijhoff, 1994, p 43.

<sup>35</sup> S.Hrg.102-719, p 36.

*Service registry number of chemicals intended to use; and (b) Specify the types of munitions and devices that it intends to deploy to disperse the chemicals referred to in subparagraph (a) above.” (von Wagner vision text, CD/CW/WP.400)*

- 22 June 1992: “*With respect to riot control agents: (i) Specify the name, structural formula and Chemical Abstract Service (CAS) registry number, if assigned, of each chemical it holds for riot control purposes; and (ii) Update its declaration not later than 30 days after any change becomes effective.*” (von Wagner chairman’s text, CD/CW/WP.400/Rev.1\*)
- 10 August 1992: “*With respect to riot control agents: Specify the name, structural formula and Chemical Abstract Service(CAS) registry number, if assigned, of each chemical it holds for riot control purposes. This declaration shall be updated not later than 30 days after any change becomes effective.*” (the draft CWC that the CD subsequently agreed, CD/CW/WP.400/Rev.2)

It was that flip from transparency for “domestic law enforcement and domestic riot control” to transparency only for “riot control agents” that was ultimately responsible for the gravity of today’s problem of divergent interpretations. It would leave people unable to see properly what states parties considered themselves justified in doing with toxic chemicals for law-enforcement purposes. Here again the Ledogar testimony of 1 May 1992 is instructive: “The US is concerned that declarations of all chemicals intended to be used for law enforcement would reveal sensitive information, such as how to defeat the chemical's effects or how to create the same chemicals for illegal use. The Chairman's text addresses this problem by requiring only declaration of chemicals held for riot control purposes. This is sufficient for the purposes of the CWC because these are the chemicals best suited for warfare.”<sup>36</sup> The US delegation, in other words, was unimpressed by the non-transparency consideration. Also, Ledogar’s “only” is perplexing, for the narrowing-down to RCAs-only of the Article III.1(e) declaration requirement would not actually happen until some seven weeks after his testimony, when the new Chairman’s text emerged on 22 June. Perhaps it was agreement within the Western Group to which he was alluding, not agreement within the full CWC negotiating body of the Conference on Disarmament.

The final compromise on the law-enforcement exemption thus involved the simultaneous fine-tuning of four quite different pieces of treaty language: on ‘purposes not prohibited’; on ‘method of warfare’; on ‘riot control agent’; and on declarations. The negotiating deadline was very tight, and the RCA issue was only a part of one of six clusters of issues identified by Ambassador von Wagner for package-resolution during the end-game.<sup>37</sup> It should not be surprising that loose ends were left dangling. Standing out in the foregoing chronologies are changing relationships between ‘law enforcement’ and ‘riot control’ and their characterization as ‘domestic’ or not, together or separately. These distinctions, and the manner in which the final treaty text interconnected them, were of course the product of contemporary diplomatic, political and other factors acting upon each of the negotiating delegations -- factors that are now fading into obscurity, leaving behind a

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<sup>36</sup> S.Hrg.102-719, pp 34-35.

<sup>37</sup> His six clusters were: (1) herbicides and riot control agents; (2) destruction matters; (3) Executive Council -- composition; (4) designation of inspectors and inspection assistants; (5) assistance and protection; and (6) economic and technological development, and transfers of scheduled chemicals. See: Chairman of the [CD] Ad Hoc Committee on Chemical Weapons, *Amendments to CD/CW/WP.400/Rev.1*, CD/CW/WP.427 of 7 August 1992.

treaty text that is, in several respects, confusing to its interpreters.<sup>38</sup> It is a confusion, moreover, that lends cover to interpretations of the treaty that are not conducted in good faith, done without proper regard to the object and purpose of the Convention. This is why it is appropriate to regard the ‘law enforcement’ exemption as a fault-line in the regime established by the CWC.

### ***Growing investment in NLW technology***

Hindsight suggests that we are obliged to ask, not only whether the attractions presented by NLW concepts are working that fault line into a fissure, but whether they were responsible for the fault line in the first place. In what degree was the growing interest in law-enforcement chemicals other than RCAs a factor conditioning the unique US negotiating stance on RCAs? What can now be said about possible US interest then in protecting options for ‘non lethal’ warfare? And might that US stance have accommodated similar but concealed or unstated interests in other negotiating countries?

The US concept of NLW in its present, post-cold-war, manifestation<sup>39</sup> was evidently at its formative stage during the final year of the CWC negotiation. In March 1992 it was reported in the US press that a study was nearing completion within the J-3 (Operations) directorate of the Joint Chiefs of Staff that was “examining how critical non-lethal battlefield technologies such as blinding lasers, chemical immobilizers, infrasound, non-nuclear electromagnetic pulse and relaxants could be used for immobilizing tactical systems, for denying the enemy’s ability to wage offensive war and for selective destruction of strategic targets.”<sup>40</sup> It was also reported then that US Defense Secretary Dick Cheney would shortly be receiving the report of the Non-Lethal Warfare Study Group, chaired by Defense Under Secretary Paul Wolfowitz, that he had established in March 1991. On 3 June 1992, the US Congress had published the latest Arms Control Impact Statements received from the administration; ARCAD, these said, “will deliver a high safety ratio, immobilization compound against relatively close targets where safe immobilization is the prime concern”.<sup>41</sup> It will be some while yet before US state papers are opened sufficiently

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<sup>38</sup> Extraneous factors often cited as having influenced the final outcome include:

- A transborder operation into Mexico by the US Drug Enforcement Agency in which an RCA was used to facilitate an arrest.
- The continued existence of the death penalty in the criminal codes of some countries. When executed with lethal chemicals, the death-penalty procedure may perhaps be regarded as a law-enforcement application of toxic chemicals, and was so regarded by a number of individuals engaged in the CWC negotiation. However, such an association between capital punishment and law enforcement is nowhere referred to in the formal papers of the CWC negotiation.

<sup>39</sup> There had been earlier manifestations, right back to the aftermath of the Great War. For example, in the late 1950s and early 1960s, the US Army Chemical Corps had publicized the idea of ‘non lethal’ biological or chemical warfare reportedly with a view to securing greater financial and institutional support both from the Army and Defense leaderships and from the Congress. See Walter Schneir, “The campaign to make chemical warfare respectable, *The Reporter*, 1 October 1959, pp 24-28. See also S M Hersh, *Chemical and Biological Warfare: America’s Hidden Arsenal* (New York, 1968), *passim*. For an especially informative account of the emergence and growth of US attention to chemical NLW other than RCAs, an account that extends to other countries, the Czech Republic among them, see Neil Davison, “‘Off the Rocker’ and ‘On the Floor’: The Continued Development of Biochemical Incapacitating Weapons”, *Bradford Science and Technology Report* [University of Bradford: Bradford Disarmament Research Centre] no 8, August 2007.

<sup>40</sup> David C Morrison, *National Journal*, 28 March 1992, pp 758-59, “Bang! Bang! You’ve been inhibited”.

<sup>41</sup> USA, 102d Congress, 2d Session, Joint Committee Print, *Fiscal Year 1993 Arms Control Impact Statements*, May 1992, pp 17-23. ‘ARCAD’ is explained on page 7 above.

for us to judge the degree to which these developments affected the ‘law enforcement’ outcome, but it is hard to suppose that they had no impact at all.

In fact there is evidence of at least some impact. Early in 1992, when it became clear that intergovernmental agreement was eventually going to be reached on a CWC, the US Defense Department started to close weapons-development projects that would conflict with the treaty. One of the closures was the previously planned transition of the ARCAD project from exploratory to advanced development for ‘Demonstration and Validation’. The explanation stated for the closure was that the emerging treaty language would restrict the use of RCAs “to internal law enforcement only”. Later, however, the Army element concerned was able to note that “the treaty language has changed to read ‘each state party undertakes not to use riot control agents as a method of warfare’ and accordingly proposed that the curtailed work should, in effect, be resumed. The resumption would take the form of an Advanced Concept Technology Demonstration, the objective of which would be “to develop non-lethal chemical materials having minimal side effects for immobilizing adversaries in various military and law enforcement scenarios”.<sup>42</sup>

As to the possibility of NLW concepts having influenced the negotiating positions of countries other than the USA, it seems that only for the UK may any such suggestion prove tenable, once the relevant state papers have been opened. According to a former member of the UK negotiating delegation, its instructions from London had been to ensure that the ‘law enforcement’ provisions of the CWC ended up with ambiguous wording, the delegation-member having earlier counselled that the Americans would not accept a resolution of the issue unless it were left vague.<sup>43</sup>

If negotiating positions had indeed been influenced by growing NLW interests, might that in any way be relevant to interpretations that should be placed today upon the CWC? Might it, for example, suggest that law-enforcement chemicals other than RCAs should only be permissible if they are ‘non lethal’? No doubt such a case could be argued, but it would not be strong. Lethality, and therefore also non-lethality, is a concept that does not figure at all in the CWC. Moreover, for a toxic chemical, the difference between lethality and non-lethality is a function also of applied dose, not just of chemical composition; and dosage, too, is a concept that does not figure in the CWC.

When the relatively simple Vienna Convention tests outlined earlier in this paper do not yield a clear interpretation of a treaty provision, or if they yield an interpretation that is manifestly absurd or unreasonable, we become obliged to study the *travaux préparatoires*. If this is indeed now becoming a necessity for the law-enforcement provisions of the CWC, it is time that scholars examined the negotiating record in more detail than has been attempted here, and do so before the option of gathering supplementary oral history is lost. In the meanwhile it is necessary to study state practice on law-enforcement chemicals. No treaty regime that is to survive the stresses of technological and political change can be regarded as immutable in its rules or procedures, and it is in state practice that pressure for change may be observed.

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<sup>42</sup> US Army Edgewood Research, Development & Engineering Center task proposal “Demonstration of Chemical Immobilizers”, 27 April 1994, as posted on <[www.sunshine-project.org](http://www.sunshine-project.org)>. See, further, The Sunshine Project, news release, 6 January 2004, “The return of ARCAD”.

<sup>43</sup> Personal communications, 9 October 2004, 29 July 2005 and 12 August 2005.

### ***Recent state practice***

Variant understandings of the law-enforcement provisions of the CWC co-existed when the treaty was opened for signature in January 1993, so the fault-line in the CWC regime goes back to its beginnings. But state practice may well have been moving on, thus changing the picture. This possibility will now be addressed for three prominent CWC states parties in turn: the Russian Federation, the United States and the United Kingdom. In each case we will look first at the period between signature and ratification of the CWC, and then at the period subsequent to entry into force of the CWC, which happened on 29 April 1997.

### ***Russian Federation***

The Russian Federation ratified the CWC on 5 November 1997, after the treaty had entered into force. There is no sign that the RCA/law-enforcement issue figured significantly during the political process of ratification. Noteworthy, however, is the fact that the USSR had exhibited a CS munition during the display of its chemical weapons to the CWC negotiators in October 1987 at Shikhany.<sup>44</sup> Later, during the massive anti-government demonstrations in Tbilisi, Georgia, during April 1989, CS munitions were among the weapons used by state forces against the demonstrators, 19 of whom died and 3000-4000 required medical attention. There were allegations of other chemical agents having been used as well, but they were substantiated by subsequent investigations only in regard to Agent CN and possibly also chloropicrin, the Schedule 3 chemical that was once widely used as a chemical-defence training agent, often in admixture with CN.<sup>45</sup> Supervising a later criminal investigation of the Tbilisi events, the USSR Deputy Chief Military Prosecutor exonerated from blame the use of CN and CS, saying: "They are not chemical weapons. In the United States and other countries CS is ranked among the so-called 'police gases'. Let me also note that a USSR Supreme Soviet Presidium decree of 28 July 1988 makes provision for the use of special means."<sup>46</sup> The report by an ad hoc commission of inquiry established by the First Congress of the USSR Peoples' Deputies, which addressed the severity of the medical effects observed in people exposed to the CN and the CS at Tbilisi, included this observation: "It ought to be noted that the factual data and the ideas presented are not sufficient to completely exclude the probability that some of the victims were poisoned by some other unidentified toxic substance."<sup>47</sup>

It is known in the outside world that the development of 'special means' continued after the Russian Federation took over the treaty responsibilities of the old Soviet Union, including final negotiation of the CWC. Significant is the fact that the Ministry of Defence, if not the Ministry of Foreign Affairs, seems not to have accepted the role of the general purpose criterion in defining the scope of the CWC (see page 9 above). Thus, Nikolai Antonov, a recently retired general of the Ministry of Defence Chemical Protection Troops, wrote in September 1993 that the

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<sup>44</sup> See the entry for 3-4 October 1987 in the News Chronology section of *Chemical Weapons Convention Bulletin* no 1 (Summer 1988), pp 4-5.

<sup>45</sup> See the entries 9 April and 24 May 1989 in the News Chronology section of *Chemical Weapons Convention Bulletin* no 5 (August 1989), pp 7 and 10.

<sup>46</sup> See the first entry for 13 December 1989 in the News Chronology section of *Chemical Weapons Convention Bulletin* no 8 (June 1990), p 4.

<sup>47</sup> "Findings of the Commission [chair: A Sobchak] of the USSR Congress of People's Deputies to Investigate the Events which Occurred in the City of Tbilisi, 9 April 1989", as published in *Istoricheskiy Arkhiv* vol 3 (1993) pp 102-120, as translated from the Russian in *Cold War International History Project Bulletin*, issue 12/13, Fall/Winter 2001, pp 35-48.

Convention “does not prohibit the use of ‘non lethal’ chemical weapons”. Possibly he was here referring to antimateriel weapons, but, in regard to antipersonnel chemical ‘immobilizers’, of which he cited carfentanil as an example, he went on to remark that “the text of the convention does not give a clear answer as to whether the use of immobilizers as chemical weapons is prohibited”.<sup>48</sup>

Public manifestation of prevailing Russian policy in this area came during the lifting of the Moscow theatre siege by state Special Forces on 26 October 2002. Apparently for the first time ever in the law-enforcement history of the world (although not in science fiction), a ‘knockout gas’ was employed -- an aerosol of a rapid-acting narcotic opioid,<sup>49</sup> introduced through the theatre’s ventilation system. The physiological effects of the chemical lay far beyond those with which the CWC defines ‘riot control agents’, not least in that 124 of the 763 hostages died from their exposure to the chemical. The precise identity of the chemical has not been disclosed publicly. Samples were obtained and analysed by, for example, the British government, but no findings were reported publicly.<sup>50</sup> A former Russian Defence Ministry official told reporters that “most likely the agent they chose was the gas known as *Kolokol-1*, the most promising of all psychochemical agents developed by the Soviet special services”. The Moscow *Kommersant* reported that the chemical was not standard Special-Forces issue but that it was a “modern international development in the counter-terrorism area”.<sup>51</sup> An American specialist later said that the agent was known in Russia as ‘M99’.<sup>52</sup>

Russian Health Minister Yuriy Shevchenko told a news conference on 30 October that the ‘special means’ had been “a mixture of derivative substances of the fast action opiate Fentanyl”.<sup>53</sup> He also said that day: “I officially declare: chemical

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<sup>48</sup> N Antonov, *Mezhdunarodnaya Zhizn* (Moscow), September 1993, pp 81-86, “[Post-Convention chemical weapons]”, as translated from the Russian in JPRS-TAC-93-022, 16 Dec 93, pp 8-11, under the headline “CW Convention Said To Allow ‘Nonlethal’ CW”. The reference to carfentanil is striking, not least because, in US defence intelligence circles, there had been speculation during the early 1980s, so Martin Furmanski has related [personal communication, 10 June 2006], that this particular fentanyl was the active principle of ‘Blue-X’, a disabling chemical reportedly being used by Soviet forces in Afghanistan [on which see *Marine Corps Gazette* July 1986, pp 58-65]. An alternative explanation is that General Antonov was merely alluding to a new edition of US Army Field Manual FM 3-9, now entitled *Potential Military Chemical/Biological Agents and Compounds*, issued on 12 December 1990, which, in contrast to the previous edition, included mention of Fentanyls (but not carfentanil specifically) in its section on incapacitating agents.

<sup>49</sup> Evidently so, for its effects could rapidly be countered with naloxone.

<sup>50</sup> The identification of the agent as carfentanil has, however, now entered the British medical literature. See, for example, James Tong and Jeffrey Geoghegan, “Chemical warfare agents”, *Continuing Education in Anaesthesia Critical Care & Pain*, vol 6 no 6 (December 2006) pp 230-34.

<sup>51</sup> See the entry for 26 October 2002 in the News Chronology section of *The CBW Conventions Bulletin* no 58 (December 2002), pp 45-46. A fuller review of the available source material is in J P Perry Robinson, *Disabling Chemical Weapons: A Documented Chronology of Events, 1945-2003*, version of 1 November 2003 (an unpublished sourcebook for the projected HSP monograph *Disabling Chemicals and the Chemical Weapons Convention* cited in footnote 1 above), pp 139-42. See, further, NATO Research and Technology Organisation, “Medical Aspects of the Moscow Theatre Hostage Incident”, Annex M in the Final Report of NATO RTO HFM-073, *The Human Effects of Non-Lethal Technologies*, August 2006.

<sup>52</sup> John Alexander speaking at the Second European Symposium on Non-Lethal Weapons, Ettlingen, Germany: see the entry for 13-14 May 2003 in the News Chronology section of *The CBW Conventions Bulletin* no 61 (September 2003) p 17. Perhaps coincidentally, ‘M99’ serves as a designator that is widely used for the hydrochloride salt of the thebaine-derived benzomorphan known as Etorphine, which is a narcotic analgesic extensively used in veterinary practice for immobilizing large animals.

<sup>53</sup> ITAR-TASS from Moscow in English, 2112 hrs GMT 30 Oct 02, as in FBIS-SOV-2002-1030, ARussian experts discuss use of Fentanyl in hostage crisis@.



substances which might have fallen under the jurisdiction of the international convention on banning chemical weapons were not used during the special operation.”<sup>54</sup> Ten days later his ministry declined to release further information about the ‘special means’ to the State Duma Health Committee, saying that it was a “state secret”. By this time other government departments were issuing denials that the way in which the theatre siege had been lifted violated the Chemical Weapons Convention, asserting, thereby, that the use of disabling chemical had been “treaty-permitted ‘law enforcement’ [and not] a prohibited ‘method of warfare’ against armed rebels”.<sup>55</sup> Thus Munitions Agency Director-General Zinoviy Pak spoke as follows to reporters during an international conference in Moscow:

“[I]n dealing with this terrorist act Russia did not depart an iota from the Convention. Russia fulfilled that mission in full accordance with the Convention. Namely, the convention allows the use of chemical agents to restore order in a country. These chemicals must be declared by the state to the international organization. Russia has done all that. The chemicals have been declared and Russia uses them. But in this situation we were talking about a law-enforcement action, a unique law-enforcement action that the Convention also allows for -- I must tell you that the substance used is child’s play compared with List 123 of banned substances. If, God forbid, anyone had used a substance from List 123, not a single soul would have remained alive. In fact, most people living in the neighboring houses would have died. So, there are neither legal nor actual grounds of suspecting Russia. Russia has complied with everything scrupulously. And the special services can share with you what this substance was.”<sup>56</sup>

Unless Pak was speaking entirely for himself, which surely he was not, his statement seems to portray an official Russian position that had now moved close to that of the USA: the CWC allows use of chemicals other than RCAs for law-enforcement purposes, and the identity of such chemicals may remain undeclared to the OPCW.

Whether Russian state practice since then has included further resort to ‘knockout gas’ is not clear from the public record. Episodes in which preparations for use of such an agent (including local issue of anti-opiate antidotes) and even actual use have been alleged, but only in remoter parts of the Russian Federation that are difficult and dangerous for outsiders to access. The Beslan school siege in September 2004 is one example,<sup>57</sup> and the Nalchik events of October 2005 are another.<sup>58</sup> Maybe there is truth in these allegations, maybe not. Maybe it has become appreciated that physical and/or medical protection against the new weapon is not impossible, and that its counter-terrorist value to the Russian state is therefore a diminishing asset.

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<sup>54</sup> Sebastian Alison from Moscow for Reuter, 1257 hrs ET 30 Oct 02, “Russia confirms siege gas based on opiate fentanyl”.

<sup>55</sup> David A Koplow, “Tangled up in khaki and blue: lethal and non-lethal weapons in recent confrontations”, *Georgetown Journal of International Law*, vol 36 no 3 (Spring 2005) pp 703-808, at p 777.

<sup>56</sup> Transcript of press conference regarding Russia=s compliance with the chemical weapons convention, Renaissance Hotel, Moscow, 11 Nov 02. See the entry for 11-12 November 2003 in the News Chronology section of *The CBW Conventions Bulletin* no 59 (March 2003) pp 13-14.

<sup>57</sup> MosNews on-line, 26 October 2005, “Secret antidote may have killed Beslan children—Nord-Ost survivor”. According to unidentified Russian officials quoted by the *New York Times* on 4 September 2004, the Beslan attackers themselves carried gas-masks; see <http://english.pravda.ru/russia/59077-0>.

<sup>58</sup> See the first entry for 14 October 2005 in the News Chronology section of *The CBW Conventions Bulletin* no 69+70 (December 2005), p 60.

## *United States*

In the USA during the period leading from signature to ratification of the CWC, which happened on 25 April 1997, four days before the treaty entered into force, no particular secret was made of the fact that work on 'non lethal' chemical weapons was continuing. Some of this has been noted earlier (see pages 13-14 above).

Research and development projects in support of the Non Lethal Warfare/Technology initiative had been moving forwards since 1991.<sup>59</sup> Among other NLW concepts, the US Army was investigating what it called "advanced riot control agents" that could "immobilize rapidly, retain their effectiveness for short periods of time and leave no permanent side effects".<sup>60</sup> Included in this programme were the opioid anaesthetic fentanyl that the Army had long previously identified as candidate 'chemical immobilizers'.<sup>61</sup> The Defense Department announced that it had been collaborating since May 1994 with the Department of Justice on the development of technologies that can "serve the needs of police and soldiers engaged in operations other than war".<sup>62</sup> An active figure in this joint work wrote in 1995:

"Among the most mature of Less-Than-Lethal technologies are antipersonnel chemicals that render an adversary incapable of carrying out a military mission or criminal activity without permanent harm to people or property. Potential military missions include peacekeeping operations; crowd control; embassy protection; and counterterrorism. Law enforcement applications include use by local, state and national law enforcement agencies in hostage and barricade situations; crowd control; close proximity encounters; prison riots; and to halt fleeing suspects. Depending on the specific scenario, several classes of chemical have potential use, to include: potent analgesics/anaesthetics as rapid acting immobilizers; sedatives as immobilizers;

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<sup>59</sup> Morrison, *supra*, note 40.

<sup>60</sup> David C Morrison, *National Journal*, 7 Nov 92, p 2589, "War without death?"

<sup>61</sup> *ASA Newsletter* no 37 (12 Aug 93) and no 38 (14 Oct 93) p 14, reproducing the CBW-relevant parts of the latest Defense Department request for proposals under its Small Business Innovation Research Program. Topic A93-224 is "Less-Than-Lethal Immobilizing Chemicals" and has as its objective: "To suggest, acquire, evaluate and develop chemical immobilizing materials for application to various missions such as: rescue, embassy protection, anti-terrorism, barricade situations, domestic disturbances, and other law enforcement scenarios." The topic description is as follows: "Most recent less-than-lethal (LTL) programs at US Army Edgewood RDE Center focused on the fentanyl as candidate compounds. Some fentanyl are widely used as injectable anesthetics and others are being studied as wildlife and veterinary tranquilizers. Many of these compounds are well-characterized, rapid acting, very potent and reliable in their activity. However, for many LTL applications, they have safety ratios that are too low and durations of action that are too long. Ideally one needs a material that will act safely, virtually instantaneously and last for just a few minutes. Thus, candidate chemical immobilizers with improved safety ratios and shorter duration of action are needed." The *Merck Index* records that fentanyl had been patented in 1964 as a narcotic analgesic, and that it was also used as a veterinary tranquillizer. In May 1963, the US Army Chemical Corps let a contract to Baylor University College of Medicine to evaluate fentanyl (then identified as CS 42,251) and related drugs in human volunteers. See also the 12 December 1990 edition of US Army Field Manual FM 3-9 (*supra* note 48) at pp 50-51.

<sup>62</sup> See the third entry for 21 June 1994 in the News Chronology section of *The CBW Conventions Bulletin* no 25 (September 1994), p 22. Several government and military agencies, including the Defense Advanced Research Projects Agency and Energy Department laboratories, had by then started NLW programmes, which included projects for chemical immobilizers, 'neural inhibitors' and a variety of different anti-materiel chemical/biological weapons, and a major NLW funding initiative was being predicted for inclusion in the FY 1996 budget. See the fourth entry for 22 March 1994 in the News Chronology section of *The CBW Conventions Bulletin* no 24 (June 1994), p 20.

and calmatives that leave the subject awake and mobile but without the will or ability to meet objectives.”<sup>63</sup>

In July 1996, the US Defense Department issued a directive establishing policy for ‘non lethal’ weapons and designating the Commandant of the Marine Corps as Executive Agent for the DOD Non-Lethal Weapons Program.<sup>64</sup> In September, the US Army Training and Doctrine Command issued its *Concept for Nonlethal Capabilities in Army Operations*, a draft of which had been released four years previously, just as the CWC negotiation was ending.<sup>65</sup> The *Concept* included a listing of “required capabilities”, including five subcategories of means for “affecting human capabilities”, viz “(1) Temporary disorientation. (2) Crowd control or dispersal. (3) Calm or stun personnel. (4) Immobilize personnel. (5) Sensory impairment.” Included in the *Concept* was an appendix on possible “personnel effectors” for these subcategories, including “Incapacitating Substances”, “Irritants” and “Vomiting Agents”.<sup>66</sup> In January 1997, in an act ratifying US military support for the general NLW idea, the Joint Non-Lethal Weapons Directorate (JNLWD) was chartered, with the Marine Corps in charge. During the four-month siege of the Japanese embassy in Lima, where on 17 December 1996 MRTA militants took some 400 people hostage, the US Marine Corps reportedly “evaluated the possible use of incapacitants” to lift the siege.<sup>67</sup>

The chemical agents that were most visible in the NLW Program at that time were the irritant chemicals Agent CS and, especially, Agent OC, both of which fall squarely within the CWC definition of RCAs. Those in the United States who had opposed inclusion of RCAs within the scope of the CWC could be expected to continue their opposition during the ratification process, so when, on 23 November 1993 (ten months after the USA had signed the treaty), President Clinton submitted the CWC to the US Senate for advice and consent to ratification, he undertook to conduct a new review of RCA policy. The review was to address the “impact of the Convention's prohibition on the use of riot control agents as a method of warfare on Executive Order No 11850, which specifies the current policy of the United States with regard to the use of riot control agents in war”.<sup>68</sup> In June 1994 the review resulted in the following communication to the Senate:

“Article I(5) of the CWC prohibits Parties from using RCAs as a ‘method of warfare’. That phrase is not defined in the CWC. The United States interprets this provision to mean that:

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<sup>63</sup> C Parker Ferguson, “Less-than-lethal antipersonnel chemicals”, in US Army Edgewood Research, Development and Engineering Center, *Abstract Digest* for the 1995 Annual Scientific Conference on Chemical and Biological Defense Research, pp 77-78.

<sup>64</sup> USA, Department of Defense, Directive 3000-3, *Policy for Non-Lethal Weapons*, 9 July 1996. See also [www.jnlwp.com/History.asp](http://www.jnlwp.com/History.asp), updated 11 October 2007.

<sup>65</sup> See the second entry for 4 September 1992 in the News Chronology section of *The CBW Conventions Bulletin* no 18 (December 1992), p 12.

<sup>66</sup> USA, Department of the Army, Training and Doctrine Command, *Military Operations: Concept for Nonlethal Capabilities in Army Operations*, TRADOC Pamphlet 525-73, 1 September 1996, [www-tradoc.army.mil/tpubs/pams/p525-73.htm](http://www-tradoc.army.mil/tpubs/pams/p525-73.htm).

<sup>67</sup> The siege was eventually broken on 22 April 1997, without use of disabling chemicals. A factor reportedly militating against their use was the calculation in the Marine Corps study that around one thousand paramedics would have to be on stand-by in order to remedy adverse effects of the incapacitant on the embassy hostages. See Massimo Annati and Ezio Bonsignore, “Non-Lethal Weapons”, *Military Technology* vol 27 no 7 (July 2003) pp 44-50.

<sup>68</sup> President William J Clinton, letter addressed to the Senate of the United States dated 23 November 1993, as printed in *US Department of State Dispatch* vol 4 no 49 (6 Dec 93) pp 849-51.

- The CWC applies only to the use of RCAs in international or internal armed conflict. Other peacetime uses of RCAs, such as normal peacekeeping operations, law enforcement operations, humanitarian and disaster relief operations, counter-terrorist and hostage rescue operations, and noncombatant rescue operations conducted outside such conflicts are unaffected by the Convention.
- The CWC does not apply to all uses of RCAs in time of armed conflict. Use of RCAs solely against noncombatants for law enforcement, riot control, or other noncombat purposes would not be considered as a ‘method of warfare’ and therefore would not be prohibited. Accordingly, the CWC does not prohibit the use of RCAs in riot control situations in areas under direct US military control, including against rioting prisoners of war, and to protect convoys from civil disturbances, terrorists, and paramilitary organizations in rear areas outside the zone of immediate combat.
- The CWC does prohibit the use of RCAs solely against combatants. In addition, according to the current international understanding, the CWC's prohibition on the use of RCAs as a ‘method of warfare’ also precludes the use of RCAs even for humanitarian purposes in situations where combatants and noncombatants are intermingled, such as the rescue of downed air crews, passengers, and escaping prisoners and situations where civilians are being used to mask or screen attacks. However, were the international understanding of this issue to change, the United States would not consider itself bound by this position.

Upon receiving the advice and consent of the Senate to ratification of the Chemical Weapons Convention, a new Executive Order outlining US policy on the use of RCAs under the Convention will be issued [to replace EO 11850]. I will also direct the Office of the Secretary of Defense to accelerate efforts to field non-chemical, non-lethal alternatives to RCAs for use in situations where combatants and noncombatants are intermingled.”<sup>69</sup>

In fact Executive Order 11850, which set out employment policy for chemical herbicides and RCAs following US ratification of the Geneva Protocol in 1975, was not replaced and co-exists today alongside the CWC as direction for US policy on RCAs.

Reconciliation of Executive Order 11850 with impending US obligations under the CWC remained controversial throughout the ratification debate, the character of which was greatly changed when, in November 1994, the Republicans took control of both houses of Congress. Quite early on, a report from an influential non-governmental body, the Council on Foreign Relations, commented on the “tragic irony” that the Chemical Weapons Convention might, by outlawing “use of chemical riot control agents against combatants in wartime”, cause lethal means to be used against noncombatants.<sup>70</sup> The Chairman of the Joint Chiefs of Staff testified in March 1996 that the Joint Chiefs “would have preferred to preserve all four options for the use of riot-control agents” authorized in the Executive Order, but went on to state that “we agreed with the administration that the benefits of the treaty outweighed the

<sup>69</sup> William J Clinton, Report on the Chemical Weapons Convention -- Message from the President, PM 129, 23 June 1994, as printed in *Congressional Record* (daily edition), 24 June 1994, p S7635.

<sup>70</sup> Report of an Independent Task Force chaired by Malcolm H Wiener and sponsored by the Council on Foreign Relations, *Non-Lethal Technologies: Military Options and Implications*, released 22 June 1995.

importance of preserving the two disputed options [*i.e.*, use in the ‘intermingled’ situation where noncombatants are used to screen attacks, and use to rescue downed aircrews]”.<sup>71</sup> A month later, the Senate Foreign Relations Committee report to the full Senate recommending ratification included the following:

“The Senate, recognizing that the Convention's prohibition on the use of riot control agents as a ‘method of warfare’ precludes the use of such agents against combatants, including use for humanitarian purposes where combatants and noncombatants are intermingled, urges the President (i) to give high priority to continuing efforts to develop effective nonchemical, nonlethal alternatives to riot control agents for use in situations where combatants and noncombatants are intermingled; and (ii) to ensure that the United States actively participates with other parties to the Convention in any reassessment of the appropriateness of the prohibition as it might apply to such situations as the rescue of downed air crews and passengers and escaping prisoners or in situations in which civilians are being used to mask or screen attacks.”<sup>72</sup>

The *Concept for Nonlethal Capabilities in Army Operations* that the US Army Training and Doctrine Command had issued in 1996<sup>73</sup> stated that the Executive Order policy on RCAs remained in effect notwithstanding US signature of the CWC. When the Senate finally acted on the CWC in April 1997, its resolution consenting to US ratification included among its conditions one on RCAs. This was Condition 26, which required the President to certify, as he at once did, that

“the United States is not restricted by the Convention in its use of riot control agents, including the use against combatants who are parties to a conflict, in any of the following cases: (i) the conduct of peacetime military operations within an area of ongoing armed conflict when the United States is not a party to the conflict (such as recent use of the United States Armed Forces in Somalia, Bosnia, and Rwanda); (ii) consensual peacekeeping operations when the use of force is authorized by the receiving state, including operations pursuant to Chapter VI of the United Nations Charter; and (iii) peacekeeping operations when force is authorized by the Security Council under Chapter VII of the United Nations Charter.”

President Clinton also stated in his certification message to the Congress that all three cases “are situations in which the United States is not engaged in a use of force of a scope, duration and intensity that would trigger the laws of war with respect to U.S. forces”.<sup>74</sup>

So, by the end of the US ratification process, ambiguities still persisted in US policy on RCAs, while research and development were being pressed ahead on other chemicals that might be applicable to law-enforcement including counter-terrorist operations. When the time came for the USA to declare to the OPCW the chemicals it held for riot control purposes, as required under CWC Article III.1(e), it listed ten different agents, including at least one that seemed to fall outside the treaty definition

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<sup>71</sup> USA, 104th Congress, 2nd session, Senate, Committee on Foreign Relations, hearings, *Convention on Chemical Weapons (Treaty Doc. 103-21)*, S. Hrg. 104-668, Washington, DC: US Government Printing Office, 1996.

<sup>72</sup> *Congressional Record* (daily edition), 30 April 1996, p S4425.

<sup>73</sup> USA, TRADOC Pamphlet 525-73, *supra*, note 66.

<sup>74</sup> President Clinton, message to the Congress of the United States, 25 April 1997, via Federal Department and Agency Documents, 25 Apr 97, via Nexis.

of a riot control agent.<sup>75</sup> US practice on surplus or obsolete stocks of RCAs, including any ‘tactical’ (as opposed to ‘riot control’) CS munitions remaining from the Vietnam War, is not apparent from the public record, so it is not known whether they were or were not declared to the OPCW.<sup>76</sup>

Just as the CWC was entering into force, the US Navy Judge Advocate General initiated a ‘legal review’ of proposed chemical-based ‘non lethal’ weapons, both antipersonnel and antimateriel. This was in accordance with the 1974 Defense Department Instruction that required the legality of any new weapon under international law to be reviewed by the military department concerned, the task in this case falling to the Navy JAG because the Marine Corps was running the NLW Program.<sup>77</sup> This initial legal review was completed in November 1997 and approved a list of new, advanced or emerging technologies that might lead to developments of interest to the Joint NLW Directorate. The technologies it approved for antipersonnel purposes included aqueous foam, malodorous agents, oleoresin capsicum (OC), cayenne pepper spray, smokes and fogs, and riot control agents. The approved technologies also included gastrointestinal convulsives and calmativ agents, *but only if these were classified as riot control agents*. Once actual weapons had been developed from the technologies, they would be subject to further legal review.<sup>78</sup>

The annual report for 1999 of the JNLWD duly recorded work on “calmativ payloads”<sup>79</sup> (though it made no mention of continuing work on anaesthetic or sedative ‘immobilizers’, possibly because they were now also called ‘calmativ’<sup>80</sup>). The work of the JNLWD was reviewed in detail by a task force of the Council on

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<sup>75</sup> The ten agents declared were CN, CNB (a 10 percent solution of CN in equal parts of benzene and carbon tetrachloride), CNC (a 30 percent solution of CN in chloroform), CNS (a 23 percent solution of CN in equal parts of chloroform and chloropicrin), CR, CS, CS1 (micropulverized CS containing 5 percent silica aerogel), CS2 (much the same as CS1, but with silicone-treated silica aerogel), OC (typically 5-10 percent capsaicin) and DM. See Harvard Sussex Program *CBW Events Data-Base*, the fourth record for 970529. Of the agents declared, CNS contains a chemical that is listed in a schedule – the Schedule 3 chemical chloropicrin – and therefore does not satisfy the CWC’s definition of a riot control agent. Agent DM was at one time categorized by the US Army as an ‘incapacitating agent’, not a riot control agent.

<sup>76</sup> Having unearthed 9140 grenades charged with CN/DM mixture at one of its military bases in Germany, the UK included them as ‘old chemical weapons’ in its declarations to the OPCW. They had been abandoned there in June 1945 by US forces. See: UK Department of Trade and Industry, *1998 Annual Report on the Operation of The Chemical Weapons Act 1996*, April 1999.

<sup>77</sup> Article 36 of 1977 Protocol I Additional to the 1949 Geneva Conventions states that “*In the study, development, acquisition or adoption of a new weapon, means or methods of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party*”. The United States is not yet among the states parties to this Protocol, but on 16 October 1974 the US Defense Department had issued Instruction 5500.15, *Review of legality of weapons under international law*.

<sup>78</sup> USA, Department of the Navy, Office of the Deputy Assistant Judge Advocate General, International and Operational Law Division, *Legal review of proposed chemical based nonlethal weapons*, approved 30 November 1997, as reported in Coppernoll, *supra*, note 33.

<sup>79</sup> Dated March 2000 as posted at <iis.marcorsyscom.usmc.mil/jnlwd/JNLW\_Docs.htm>, viewed 23 June 2000, p 20.

<sup>80</sup> In October 2000, the Institute for Non-Lethal Defense Technologies that Pennsylvania State University had established in November 1997 published a review of the scientific literature on ‘calmativ’, a category the authors took to comprise a wide variety of CNS depressants including anaesthetic agents, skeletal-muscle relaxants, opioid analgesics, anxiolytics, antipsychotics, antidepressants, sedative-hypnotic agents and various drugs of abuse: Joan M Lakoski, W Bousseau Murray and John M Kenny, *The Advantages and Limitations of Calmativ for Use as a Non-Lethal Technique*, 3 October 2000, as posted on [www.nldt.org](http://www.nldt.org).

Foreign Relations, which then suggested that “US security might be improved by a modification to [...] the Chemical Weapons Convention”.<sup>81</sup> In March 2000, Edgewood Chemical Biological Center (an Army R & D establishment) announced<sup>82</sup> that it had selected a proposal for funding ‘Phase I’ work to:

“Demonstrate the feasibility of a safe, reliable chemical immobilizing agent(s) for non-lethal (NL) applications in appropriate military missions and law enforcement situations. Recent pharmaceutical developments suggest that new approaches to safer chemical immobilizers with improved performance characteristics may be available. NL applications may include incapacitating personnel, clearing of facilities and area denial.”

In November 2002 the National Research Council, which is one of the US National Academies, published *An Assessment of Non-Lethal Weapons Science and Technology* recommending that ‘non lethal’ weapons, ‘calmatives’ among them, be given higher priority, and advising the JNLWD to establish at least five centres of excellence to provide “unique expertise”.<sup>83</sup> The ending of the Moscow theatre siege had just sensitized readers to these NRC recommendations and when, on 18 November 2002, President Bush publicly praised President Putin for having authorized use of an opiate to end the siege,<sup>84</sup> the recommendations would no doubt have acquired added weight.<sup>85</sup>

Yet what exactly has since been happening on chemical weapons in the NLW Program is largely impossible for outsiders to discern, for most of the work is now classified. Perhaps the early enthusiasm in some quarters for chemical NLW has not been matched by worthwhile laboratory results. Perhaps opportunity for unveiling novel chemical NLW has not yet arisen. Save possibly within the international community of CBW defence scientists, the outside world can today see the Program

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<sup>81</sup> This recommendation did, however, continue: “In that case the DoD should propose such a step to the National Security Council and the interagency mechanism involved, to ensure due evaluation of the overall benefits, costs, and the feasibility of the proposed change.” See Council on Foreign Relations, report of an Independent Task Force sponsored by the Council (Chair: Richard L Garwin, Project Director: W Montague Winfield), *Nonlethal Technologies: Progress and Prospects*, New York: Council on Foreign Relations, 1999.

<sup>82</sup> *CB Quarterly* [SBCCOM (Edgewood-Natick) RDA Enterprise] no 21 (March 2000) p 19. The proposal had been submitted under Topic CBD00-108, “Chemical immobilizing agents for non-lethal applications”, in the Defense Department’s Small Business Innovation Research Program as reported in *ASA Newsletter* no 76 (29 Feb 00), pp 25-30. It seems [personal communications, 31 October 2002] that the proposal was from a business called OptiMetrics, Inc, where C Parker Ferguson [*supra*, note 63] was now based.

<sup>83</sup> See the fifth entry for 4 November 2002 in the News Chronology section of *The CBW Conventions Bulletin* no 59 (March 2003), p 10.

<sup>84</sup> See the fifth entry for 18 November 2002 in the News Chronology section of *The CBW Conventions Bulletin* no 59 (March 2003) p 16.

<sup>85</sup> On the day before the siege was lifted, President Bush as well as other foreign leaders offered support to President Putin. A recent NATO publication has included the following account, based on cited Russian sources: “On October 25 ... Bush telephoned Putin and offered unspecified help in freeing the hostages. On that same day, representatives of the U.S. special services met with a deputy director of the FSB to discuss the situation. Representatives of the special services of Great Britain, Germany, Turkey, France, Switzerland, and Japan also attended this meeting. At 10:40 p.m. that same evening, the head of the MVD of Russia, Boris Gryzlov, and the director of the FBI, Robert Muller, agreed to work together under a regime of constant communication. Muller proposed to send to Moscow American specialists on antiterrorist activity and specialists in the sphere of using special technical means.” The apparent Russian imputation here that the US government was actively complicit in the resort to novel counter-terrorist chemical weapons was left uncountered. See Annex M to the Final Report of NATO RTO HFM-73, *supra*, note 51.



only through the prism provided by non-governmental bodies exploiting the US Freedom of Information Act and the skills of Open Source intelligencers.<sup>86</sup>

Reports of ‘calmatives’ being issued to US forces on active duty have sometimes been heard. Guards at Camp Delta, Guantanamo, are said by a released inmate to have used sprays to render prisoners unconscious.<sup>87</sup> Another such report, which alleged that US Special Forces deployed to Iraq just prior to the 2003 invasion “had knock-out gases that can ‘neutralise’ people”,<sup>88</sup> received an express denial from the Defense Department spokesperson: “The allegation that the US intends to use calmative agents in a prospective war with Iraq is absolutely false”.<sup>89</sup>

In that same statement, the Pentagon spokesperson also addressed US practice regarding RCAs:

“Riot control agents, such as CS, are non-lethal and may be used by US forces only when authorised by the President, and only under specific circumstances, to protect non-combatants. Contrary to the reporters’ claim [that the CWC bans the use of RCAs “in battle”], use of these agents for defensive purposes to save lives would be consistent with the Chemical Weapons Convention, which prohibits the use of riot control agents as a method of warfare”.

The statement did not identify its authority for this interpretation of the CWC, which appears to be inconsistent with that of the previous US administration. New RCAs have continued to be sought. Alongside Acoustics, Entanglements, Kinetics, and Vehicle Stoppers, Riot Control Agents are one of the five categories of research and development thrust sponsored by the JNLWD, which includes in the RCA category “Development of crowd control systems that confuse, stop, neutralize, disable, disorient, distract, disperse, or isolate groups of people or potential threats over various terrain and environmental conditions”.<sup>90</sup> What the JNLWD regards as RCAs does not seem to be identical to the CWC definition.

In November 2005 the US Senate voted 98-1 to accept an amendment to S.1042, its 2006 Defense Authorization Act, stating that

“It is the policy of the United States that riot control agents are not chemical weapons and that the President may authorize their use as legitimate, legal, and non-lethal alternatives to the use of force that, as provided in Executive Order 11850 (40 Fed.Reg.16187) and consistent with the resolution of ratification of the Chemical Weapons Convention, may be employed by members of the Armed Forces in war in defensive military modes to save lives, including the illustrative purposes cited in Executive Order 11850.”<sup>91</sup>

The amendment – which, in much starker form, had been proposed on 21 July 2005 -- also required the President to submit a report to Congress on the availability of RCAs and their use by the military. Passage of the amendment had become possible once its sponsor, Senator John Ensign of Nevada, provided assurance to the Senate that it was

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<sup>86</sup> Most notably the Sunshine Project, and also the NLW Research Programme at the Bradford Disarmament Research Centre.

<sup>87</sup> James Meek, *Guardian* (London), 3 December 2003, G2, “Inside Guantanamo: people the law forgot”, at p 5.

<sup>88</sup> RADM Stephen Baker, as reported in: Geoffrey Lean and Severin Carrell, *Independent on Sunday* (London), 2 March 2003, “US prepares to use toxic gases in Iraq”.

<sup>89</sup> Victoria Clarke [Assistant Secretary of Defense for Public Affairs], letter to the editor published in *Independent on Sunday* (London), 9 March 2003, p 31.

<sup>90</sup> [http://iis.marcorsyscom.usmc.mil/jnlwd/JNLW\\_Program.htm](http://iis.marcorsyscom.usmc.mil/jnlwd/JNLW_Program.htm), version current 1 Mar 00.

<sup>91</sup> Section 1232 of the US National Defense Authorization Act for Fiscal Year 2006. The original text of the amendment was in SA.1374 .



not an attempt to change existing US policy.<sup>92</sup> A year later the Ensign Amendment provided occasion for the following statement of RCA employment policy by the present Bush administration:

“The Administration agrees with the policy statement in the National Defense Authorization Act for FY2006, section 1232 (the ‘Ensign Amendment’) ... The Department of Defense has issued regulations, doctrine, and training materials providing guidance as to when riot control agents may be used... [T]he primary legal bases for these materials are Executive Order 11850 [...] and the [CWC]... The Military Departments have established requirements that personnel receive training on riot control agents before they are authorized to carry or employ them... Annual training of service members also provides an opportunity for supplemental training in the use of riot control agents. For example, in accordance with the Geneva Conventions of 1949 and the Hague Convention of 1907, military personnel who may employ riot control agents, such as Military Police, are required to receive annual instruction on the law of armed conflict, which includes the subject of the permissible use of riot control agents, when relevant to operational duties... Before U.S. military personnel may use riot control agents, they must have the proper authorization. Pursuant to Executive Order 11850, Presidential approval is required prior to riot control agent use in war in defensive military modes to save lives. Separate regulations delegate to the Secretary of Defense advance authority to authorize the use of riot control agents in peacetime. However, certain peacetime uses of riot control agents have been delegated to the Combatant Commands and Chiefs of Services such as uses at US facilities and installations for riot control, installation security, civil disturbance operations training, and noncombatant emergency evacuation operations... In conjunction with the preparation of the report required by the Ensign Amendment, we initiated a review of the authorities applicable to the use of riot control agents under various circumstances in light of the changing environment in which armed conflicts are taking place. In such a dynamic environment, the peacekeeping, law enforcement, and traditional battlefield roles of deployed units may be present at different times within the same theater of operations. The use of riot control agents will be evaluated based on the particular unit or mission involved and the particular facts and circumstances of the mission at the requested time... I would like to conclude by highlighting the continuing validity of Executive Order 11850. Executive Order 11850, which has not been modified or rescinded since it was issued, remains in effect.”<sup>93</sup>

No such clarity exists in public for US policy and posture on other forms of “non lethal” chemical weapon. No legal review has yet been published for novel chemical NLW other than ones based on RCAs. It is not demonstrable, therefore, that the apparent conflict between JNLWD programmes in this area and the provisions of the CWC is in fact leading the USA into what other CWC states parties, especially ones holding to the exclusionary interpretation of the law-enforcement provisions,

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<sup>92</sup> See the second entry for 8 November 2005 in the News Chronology section of *The CBW Conventions Bulletin* no 71 (May 2006) p 17.

<sup>93</sup> Prepared statement of Joseph Benkert, Principal Deputy Assistant Secretary of Defense for International Security Policy (Acting), dated 27 September 2006, before the US Senate Committee on Armed Services Subcommittee on Readiness and Management Support, “US policy and practice with respect to the use of riot control agents by the US armed forces”.

would regard as violation of the treaty. Yet momentum continuing to push US weapons-acquisition in that direction clearly exists. During the summer of 2003, a task force of the Defense Science Board produced a study on *Future Strategic Strike Forces*, which, among much else, observed that “calmatives might be considered to deal with otherwise difficult situations in which neutralizing individuals could enable ultimate mission success”. The study noted, however, that “the treaty implications are significant” and that the principal “technical issue is the balance between effectiveness (i.e., the targets are truly ‘calmed’) and margins of safety (i.e., avoiding overexposure and resulting fatalities of neutral bystanders)”.<sup>94</sup> Again, in July 2006 the US Air War College published a monograph on *Offensive Use of Chemical Technologies by US Special Operations Forces in the Global War on Terrorism* for which the Commandant of the College, Lt-Gen Robert J Elder, Jr, wrote in its Foreword:

“The possible use of nonlethal chemical technologies in counterterrorist operations is drawing much attention in the ongoing global war on terrorism. The examination of their use comes at a time when the United Nations Chemical Weapons Convention prohibits their application in any type of armed conflict. International law governing the use of new developments in antipersonnel and antimaterial nonlethal chemical technologies has recently been the subject of intense public debate, resulting in congressional hearings questioning the ratification enforcement protocols to the Chemical Weapons Convention. ... [The author] is clearly on mark when he concludes that the Chemical Weapons Convention must be reviewed in light of the new developments in nonlethal chemical technologies, both in the context of conventional armed conflict and unconventional counterterrorist operations. While analyzing strategic impacts, this study calls for fundamental change to be considered.”<sup>95</sup>

So it is, we can see from this and from other such examples, that a new interest in chemical warfare has been growing within the US defence establishment since the time of negotiation of the CWC. That interest, which surely is still a minority one, has been stimulating US acquisition, deployment and use-authorization of a novel category of chemical weapon, the category of counter-terrorist chemical weapon. So far as can be seen, however, US practice remains one in which RCAs are the only actual embodiment of that category currently in service. Rumours to the contrary exist,<sup>96</sup> but it is hard to see compelling reason yet for regarding them as anything more than rumour.

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<sup>94</sup> USA, Defense Science Board [Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics], Task Force on Future Strategic Strike Forces, *Report*, February 2004, at page 7-12.

<sup>95</sup> N T Whitbred IV [Commander, USN], “Offensive Use of Chemical Technologies by US Special Operations Forces in the Global War on Terrorism: The Nonlethal Option”, *The Maxwell Papers* [Maxwell Air Force Base, AL: Air War College] no 37, July 2006, pp iii-iv.

<sup>96</sup> Baker, *supra*, note 88. Also, can we ignore the statement reliably attributed to a “former high-level Defense Department official” commenting on the feasibility of US attack on Iranian underground facilities: “We can do things on the ground, too, but it’s difficult and very dangerous – put bad stuff in ventilator shafts and put them to sleep”? See Seymour M Hersh, “The Iran plans: would President Bush go to war to stop Tehran from getting the bomb?”, *New Yorker*, 17 April 2006. It is not clear whether it was a literal or a euphemistic ‘sleep’ that was meant.

## *United Kingdom*

The United Kingdom ratified the CWC on 13 May 1996. Its government's interpretation of the law-enforcement provisions of the CWC, and hence the foundation of its RCA-use policy, appears to remain as announced in that Foreign Office statement to the House of Commons on 7 December 1992, quoted on page 3 above.

As to actual practice, civil police forces in the UK are issued with Agent CS or, in the case of the Sussex force, pelargonic acid vanillylamide, which is the irritant otherwise known as PAVA or nonivamide. Agent CR is not held by police forces. The Home Office told Parliament in February 1998 that this was "because not enough is known about its chronic health effects and its carcinogenic and genotoxic potential".<sup>97</sup> Described as an irritant having "severe short-term incapacitating effects",<sup>98</sup> Agent CR is held only by the Ministry of Defence and is for maintaining what the Armed Forces Minister described to members of Parliament in March 1998 as "an effective terrorism response capability".<sup>99</sup> The Ministry of Defence also holds Agent CS<sup>100</sup> but does not any longer regard it as an adequate counterterrorist weapon, using it rather for chemical-protection training purposes and "as a contingency in case the armed forces should ever be asked to support the civil power in riot control".<sup>101</sup>

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<sup>97</sup> *Hansard (Commons)*, daily part, vol 307 no 127 col 310, written answers, 26 February 1998, Mr Michael for the Home Secretary to Mr Cohen. The reference here to 'health effects' was presumably because government policy, since the time of the 1969-71 Himsforth Inquiry into CS use in Northern Ireland, was to require that any RCA authorized for use by police forces had to be a chemical whose medical effects were widely and publicly known so that persons affected by police RCAs could be treated by ordinary civil doctors.

<sup>98</sup> *Hansard (Commons)*, daily part, 26 Jul 00, vol 354 no 142 col 679W, written answers, Mr Spellar for the Defence Secretary to Mr McNamara.

<sup>99</sup> John Reid [UK Minister of State for the Armed Forces], letters dated 25 March 1998 addressed to Messrs Harry Cohen and Ken Livingstone, with copies placed in the House of Commons Library. Other countries known to have favoured Agent CR for counter-terrorist purposes include India [see Harvard Sussex Program *CBW Events Data-Base*, entry for 980317-20] and apartheid-era South Africa [see C Gould and P Folb, *Project Coast: Apartheid's Chemical and Biological Warfare Programme*, Geneva: UNIDIR, 2002]. Besides the UK and the USA, eight countries (of undisclosed identity) have declared possession of Agent CR for riot control purposes to the OPCW: see the OPCW annual report for 2005 at page 38.

<sup>100</sup> In late March 1998, Armed Forces Minister John Reid became obliged to explain why, in written answers to two parliamentary questions on 12 March, he had told one questioner that "CS irritant is the only riot control agent held by my Department", having just informed the other questioner that "the Ministry of Defence currently holds stocks [of] CR gas ... a riot control agent designed to cause temporary irritation". His explanation was that, because the physiological effects of CR are among those used in the CWC to define 'riot control agent', CR can properly be described as a 'riot control agent', even though it is in fact held by the UK Defence Ministry for a purpose other than riot control, namely "maintaining an effective terrorism response capability". Reid, *supra*, note 99.

<sup>101</sup> *Hansard (Commons)*, daily part, vol 308 no 137 cols 324-5, written answers, 12 March 1998, Dr Reid for the Defence Secretary to Mr Cohen and Mr Livingstone. But according to a Defence Ministry reply to a subsequent parliamentary question [*Hansard (Commons)*, daily part, vol 367 no 75, col 415W, written answers, 27 April 2001, Mr Spellar for the Defence Secretary to Mr McNamara], "CR was first authorised for use by British forces in October 1968, although authorisation for its use in Northern Ireland, in special circumstances only, was not given until October 1973 ... In 1973 CR was available both in aerosol form and for use in water cannon. Subsequently, a wheeled dispenser was introduced in December 1974, a vehicle based version was deployed in 1976, and a projectile delivery device was authorised for use in 1977." This answer was later amplified [*Hansard (Commons)*, written answers, 8 May 2001, Mr Spellar for the Defence Secretary to Mr McNamara] to indicate that the 1968 and 1973 authorizations for use of CR in aerosol form were for use of a hand-held squirter "known as a self-protection aid device (SPAD)". The amplification also stated that "authorisation for CR to be held in readiness for use has always been subject to ministerial approval".

The quantities in which the two agents were held by the Ministry of Defence in 1998 were reported to Parliament: about 260 kg of CR, 2500 kg of unweaponized CS, and 54,000 CS-filled cartridges and grenades.<sup>102</sup>

Authorization to hold Agent CR “in readiness for use”, in Northern Ireland, had originally been issued in October 1973.<sup>103</sup> The Ministry of Defence has stated that its use by UK armed forces is governed by rules of engagement whose formulation varies according to the particular circumstances of an operation and which are approved on each occasion that use is authorized.<sup>104</sup> Such instances have been rare and have remained undisclosed in the public record: during the two-year period prior to January 1999 there had been two instances of authorization.<sup>105</sup> All rules of engagement for UK armed forces are required to comply with both domestic and international law as a matter of course – common law, statute law applicable to the use of force, and also including the CWC.<sup>106</sup> UK policy on combat use of RCAs was reaffirmed several times immediately prior to the 2003 invasion of Iraq. Defence Secretary Geoff Hoon told reporters on 27 March that RCAs “would not be used by the United Kingdom in any military operations or on any battlefield”.<sup>107</sup> A fortnight previously, his department had written as follows to Parliament: “The Chemical Weapons Convention prohibits the use of riot control agents as a method of warfare. United Kingdom armed forces will comply with their obligations under the Convention. The Government expect that other states parties to the Convention will likewise comply with their obligations under the Convention.”<sup>108</sup>

That reference to “other states parties” drew attention to the gulf that existed between British and US policy in this area, for it was by then publicly known that President Bush was being asked by his military commanders to authorize use of RCAs in Iraq -- as indeed he reportedly did.<sup>109</sup> The differences between the British and US military leaderships on combat use of RCAs dated back to the negotiation of the CWC, and reportedly found expression in a 24 May 1992 letter from the Chief of the UK Defence Staff to his US counterpart, General Colin Powell, as well as in subsequent transatlantic exchanges over the next few years.<sup>110</sup> In the public domain is

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<sup>102</sup> Reid, *supra*, note 101.

<sup>103</sup> *Hansard (Commons)*, daily part, vol 322 no 16 part 1, col 657, written answers, 17 December 1998, Mr Spellar for the Defence Secretary to Mr Livingstone.

<sup>104</sup> *Hansard (Commons)*, daily part, vol 330 no 76, col 5, written answers, 26 April 1999, Mr Doug Henderson for the Defence Secretary to Mr Matthew Taylor.

<sup>105</sup> *Hansard (Commons)*, daily part, vol 324 no 28, col 329, written answers, 28 January 1999, Mr Spellar for the Defence Secretary to Mr Livingstone.

<sup>106</sup> UK Ministry of Defence, personal communication, 19 May 1999.

<sup>107</sup> UK Ministry of Defence, press conference between reporters, Secretary of Defence Geoff Hoon and the Chief of the Defence Staff, Admiral Sir Michael Boyce, 27 March 2003, transcript as posted on [www.operations.mod.uk/telic/press\\_27march.htm](http://www.operations.mod.uk/telic/press_27march.htm), as viewed 27 Mar 03.

<sup>108</sup> *Hansard (Commons)*, daily part, vol 401 no 62, col 389W, written answers, 13 March 2003, Mr Ingram for the Defence Secretary to Lynne Jones.

<sup>109</sup> Nicholas Wade with Eric Schmitt, *New York Times* website edition, 5 April 2003, “US use of tear gas could violate treaty, critics say”.

<sup>110</sup> Rather little of this correspondence is yet public. It is cited in an unpublished Georgetown University Law School LL.M dissertation by Major Michael Jordan, “The Chemical Weapons Convention & Executive Order 11850, a Constitutional collision during treaty ratification”, according to a citation of the dissertation by Major Ernest Harper in footnote 10 of his “A call for a definition of method of warfare in relation to the Chemical Weapons Convention” [*supra*, note 31]. See also the report of the Second Workshop (27-29 May 1994) of the Pugwash Study Group on Implementation of the CBW Conventions in *Pugwash Newsletter* vol 32 no 1 (July 1994) pp 1-14. The main agenda item of the workshop was “Law enforcement, domestic riot control and the Chemical Weapons Convention”, and the participants included several British and US serving officers and government

a latter dated 6 June 1994 from David Omand, then Deputy Under Secretary (Policy) in the UK Defence Ministry, to Walter Slocombe, US Defense Under-Secretary, who had testified some three weeks previously to the Senate Foreign Relations Committee during its CWC-ratification hearings and who had told the Committee then that the Administration was still reviewing the matter of “how, if at all” the CWC prohibition on use of RCAs as a method of warfare affected Executive Order 11850,<sup>111</sup> which authorized use of RCAs in war “in defensive military modes to save lives”. So formulated, Omand wrote, that authorization “goes beyond the uses permitted in the treaty text” and would “open a dangerous loophole”. Development and stockpiling of military chemical munitions containing RCAs would not then be under effective control, and, in consequence, such munitions might appear on the battlefield, inviting use and eroding the treaty. In practice, Omand continued, the formulation would present serious problems of command and control, requiring constant interpretation and review. It was important, Omand concluded, that partners in coalition operations “sing from the same song-sheet”.<sup>112</sup> That particular warning would continue to be uttered in subsequent British communications.<sup>113</sup>

Chemicals other than sensory irritants have sometimes been considered for use in UK law enforcement. The UK Home Secretary was reported in July 2001 to have ordered up plans to issue police forces with tranquillizer dart guns<sup>114</sup> – a purpose for which the opioid anaesthetic TL2636 had been considered, but rejected, in the early 1970s.<sup>115</sup> However, UK officials have stated privately that the 1992 policy stricture against non-RCA law enforcement chemicals continues to be observed. Yet the policy has not been expressly reaffirmed to Parliament, and a move to this end in the summer of 1998 encountered difficulties within the Ministry of Defence,<sup>116</sup> which has since preferred the formulation that the CWC “expressly permits the use of toxic chemicals for law enforcement purposes”.<sup>117</sup> A more recent reason for supposing that policy may now be changing emerged in the wake of the Moscow theatre siege. Stating that “Fentanyl, an opium based narcotic” had been used to end the siege, a junior Foreign Office minister told Parliament that “[n]on-scheduled chemicals are not in themselves prohibited under the Convention for use in law enforcement, including domestic riot control purposes”. The minister conspicuously did not reaffirm the British understanding that law enforcement using chemicals other than

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officials who were actively engaged in the dispute. It was the proceedings of that vigorous workshop that would have formed the basis for the projected Harvard Sussex Program book *Disabling Chemicals and the Chemical Weapons Convention* referred to earlier, *supra*, note 1.

<sup>111</sup> Prepared statement by Walter B Slocombe before the Senate Foreign Relations Committee, 13 May 1994, during hearings, *Chemical Weapons Convention (Treaty Doc. 103-21)*, S. HRG. 103-869, Washington, DC: US Government Printing Office, 1994, at pp 55-9.

<sup>112</sup> Harvard Sussex Program *CBW Events Data-Base*, first record for 940606.

<sup>113</sup> As, for example, in the report of a seminar convened in London by the UK Defence Ministry on 30 November 2000 as the concluding event in the US/UK Non-Lethal Weapons Urban Operations Wargaming Program that had begun in April 1999. Referring to the divergence in the RCA-employment policies of the two countries, the report observed: “This could lead to difficulties in combined operations in certain circumstances”. See US/UK Non-Lethal Weapons (NLW) / Urban Operations Executive Seminar, 30 November 2000, London, *Assessment Report*, p 8, as posted at [www.sunshine-project.org/publications/jnlwdpdf/usukassess.pdf](http://www.sunshine-project.org/publications/jnlwdpdf/usukassess.pdf).

<sup>114</sup> Kamal Ahmed and Tony Thompson, *The Observer* (London), 15 Jul 01, pp 1-2, “Police to be armed with ‘sleep darts’”.

<sup>115</sup> “The effects of small doses of an oripavine derivative on human subjects under both laboratory and field conditions”, CDE Technical Paper no 68, Porton Down, February 1972.

<sup>116</sup> UK Ministry of Defence, personal communication, 25 August 1998.

<sup>117</sup> See, for example, *Hansard (Commons)*, daily part, vol 330 no 76, col 5, written answers, 26 April 1999, Mr Doug Henderson for the Defence Secretary to Mr Matthew Taylor.

RCA was prohibited under the Convention, nor did he venture any criticism at all of the Russian action.<sup>118</sup>

In retrospect, that is unsurprising. The impending invasion of Iraq was at that time a dominant factor in Anglo-Russian relations, and the situation in Northern Ireland would also have been prominent in the background to the minister's statement, just as it had been throughout the entire CWC negotiating period. In September 1999, the Independent Commission on Policing in Northern Ireland produced its report – the 'Patten Report' – which among other things recommended that "The police should be equipped with a broader range of public order equipment than the [Royal Ulster Constabulary] currently possess, so that a commander has a number of options at his/her disposal which might reduce reliance on, or defer resort to, the [Plastic Baton Round]." The Steering Group set up to study how best to implement the recommendation was looking at a range of equipments including chemical "less lethal technologies", calmatives among them and malodorants as well. It would later report, however, that these two categories of chemical did not "currently meet police requirements" (this was in January 2004), stating that "No further research will be carried out on either of these areas unless there are significant advances in the available technology." The Police Scientific Development Branch of the UK Home Office would, however, continue to monitor calmatives, "focussing on international research programmes and future developments in delivery methods and potential tranquillising agents".<sup>119</sup>

It is clear that in Britain, no less than in the Russian Federation and in the United States, at least some pressure exists to ignore constraining interpretations of the CWC in regard to disabling chemicals. While police interest in 'calmatives' may be low, and while munitions disseminating Agent CR may currently remain the preferred UK counterterrorist chemical weapon, other disabling chemicals continue to engage attention in the Defence Ministry laboratories at Porton Down, whose mandate anyway includes the study of protection against weaponized toxic chemicals. Restraining influences seem to exist within the European Union, or at least the European Parliament,<sup>120</sup> but NATO, which collectively has been studying 'non lethal' weapons technology at least since 1996,<sup>121</sup> must be included among the sources of pressure. The NATO Research and Technology Organisation, for example, has publicly described the opiate episode in Moscow as a "novel courageous attempt at saving the most lives".<sup>122</sup> Still, in 1999, when NATO published its *Policy on Non-*

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<sup>118</sup> *Hansard (Commons)*, daily part, vol 392 no 200, col 75W, written answers, 4 November 2002, Mike O'Brien for the Foreign Secretary to Alan Simpson.

<sup>119</sup> Fourth Report of the Steering Group led by the [UK] Northern Ireland Office on *Patten Report Recommendations 69 and 70 Relating to Public Order Equipment*, January 2004, as posted at [www.nio.gov.uk/phase\\_4\\_report\\_on\\_baton\\_rounds.pdf](http://www.nio.gov.uk/phase_4_report_on_baton_rounds.pdf).

<sup>120</sup> See, for example, the Parliament's STOA Programme study, *New Technologies in Defence Policy and Conflict Management: A Challenge for the EU*, finalized in June 2001, which includes the observation that the provisions of the Chemical Weapons Convention with regard to riot control agents allow "different interpretations", and continues: "The legality of the use of various chemical non-lethal options by the military must be investigated, a common EU position on this is desirable." See European Parliament workplan reference EP/IV/A/STOA/2000/01/01, PE number 297.567/Fin.St.

<sup>121</sup> When it was engaged in a study, *Minimizing Collateral Damage in Peace Support Operations*, that regarded as promising the idea of dispensing RCAs from crop-dusters. See *Aviation Week & Space Technology*, 19 Aug 96, p 19, "Washington outlook: high-gain pain". NATO itself dates the start of its progress "toward acquiring a NLW capability" to 1994; see NATO Research and Technology Organisation, *The Human Effects of Non-Lethal Technologies*, RTO-TR-HFM-073, August 2006, at page O-1.

<sup>122</sup> RTO-TR-HFM-073, *supra* notes 51, 85 and 121, at page M-13.

*Lethal Weapons*, its accompanying press statement declared: “The research and development, procurement and employment of Non-Lethal Weapons shall always remain consistent with applicable treaties, conventions and international law, particularly the Law of Armed Conflict as well as national law and approved Rules of Engagement.”

### ***Discussion***

Two propositions have directed the present paper thus far: that, in the law-enforcement provisions of the CWC, there exists a fault-line in the treaty regime; and that the growth of interest in NLW could be leveraging that fault-line into a fissure that might seriously harm the regime. Our review of Russian, American and British state practice has done nothing to weaken that second proposition. It is necessary, therefore, to think about possible alleviating measures.

The present paper is not the place to identify the many benefits that the CWC regime has brought to the world during the ten years of its existence. They are great and continuing. We must therefore recognise that the benefits to be gained from anything that might promote fissure -- in the present case, legitimizing chemical NLW -- would have to be very great indeed if it were to be acceptable. Otherwise it is a danger to be headed off and certainly not something to encourage.

Let us be clear, first of all, on what the actual mechanisms of fissure might be. At least five different ways can be envisaged in which continuation of the present ambiguities regarding law enforcement or a relaxation of the existing treaty constraints could damage the CWC regime. They are as follows:

- *Affording camouflage for illicit intent.* If a CWC state party were challenged to explain why it was conducting development, production or stockpiling of toxic chemicals that it had not declared to the OPCW, it could assert, rightly or wrongly, that the activity was nothing to do with chemical weapons, but was for the non-prohibited purpose of law enforcement. Only for RCAs has transparency been created in the CWC regime to facilitate states parties seeing for themselves something of what others consider justifiable for law enforcement. A great loophole thus exists within the CWC’s international verification system, endangering confidence in the treaty.
- *Diminished national control over weaponized chemicals.* If the armed forces of a CWC state party believed themselves to be justified in resorting to disabling chemicals in operations other than war, or in operations where combatants and non-combatants are intermingled, then that party’s development, storage and deployment of such weapons might no longer be under effective national control and, as a result, could appear in a theatre of military operations, thereby inviting use and eroding the CWC. Coalition operations in which allied forces did not all have identical NLW employment policies in place, or did not have substantially identical rules of engagement, would present a particular risk of bringing forward that CWC-harming eventuality.
- *Demanding use of Individual Protective Equipment during combat.* Military forces using disabling chemicals would have to protect themselves from their own weapons by wearing respirators. To onlookers (perhaps via television) it could appear that the protection was against enemy CW, or even that the protected forces were themselves using CW. Either way the appearance would be one of

chemical warfare in progress, the CWC notwithstanding. The treaty would seem to have been flouted, and its future value thereby called into question.

- *Slippery slope.* Exploiting new understanding of life processes in order to secure humanitarian benefit by using NLW rather than conventional weapons would open the way to malign objectives also – to the subjugation, coercion or repression of whole populations, not just of law-breaking elements within them. The British Medical Association has recently described this danger thus: “Using existing drugs as weapons means knowingly moving towards the top of a ‘slippery slope’ at the bottom of which is the spectre of ‘militarization’ of biology, this could include intentional manipulation of peoples’ emotions, memories, immune responses or even fertility”.<sup>123</sup> Once that NLW loophole had been created, the CWC would be powerless to prevent advantage being taken of it.
- *Creeping legitimization.* This last is the mechanism of regime fissure that we should perhaps fear the most. It is what could happen if influential groups within the polities of powerful CWC states parties come to believe that legitimization of chemical NLW could be in their best interests. They may then do what they can to keep the option open within national policy with a view, eventually, to changing the policy, perhaps in small successive stages. It would then be down to the CWC’s international authority to decide whether any such change was or was not in the best interests of the treaty. What we actually seem to be seeing now within the policy organs of the OPCW is a turning of blind eyes towards any such creeping legitimization. The position that the Director-General has therefore been obliged to take in public is that the issue is not yet ripe for resolution.

A wider concern is the integrity and continued effectiveness of the broad governance regime of which the Convention is one part. Today’s regime against chemical/biological-warfare armament – which includes the 1925 Geneva Protocol, the 1972 Biological Weapons Convention, a part of the 1977 Environmental Modification Convention, and the 1993 Chemical Weapons Convention, to say nothing of the various plurilateral measures and the several pertinent resolutions of the UN General Assembly and the UN Security Council<sup>124</sup> – derives its reach and strength from that fundamental norm of state behaviour that eschews fighting with poison or infectious disease. The norm itself seems an expression of a still deeper social taboo against weaponizing disease, ancient and reaching across cultures. Fragment the norm, as by asserting that this or that form of toxicity is not really a part of it, and the foundation of the regime may be weakened. Conversely, by reaffirming that treaties contributing to the regime are intended to keep toxicity away from the battlefield and, more generally, to preclude the hostile exploitation of disease, whether caused by infective or toxic pathogens, by animate or inanimate ones, then the norm itself is strengthened and the regime with it. The problem of the divergent law-enforcement interpretations of the CWC may thus be seen as a part of the more general problem of how to maintain valuable norms of behaviour under adverse conditions of political and technological change.

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<sup>123</sup> British Medical Association Board of Science and BMA Science & Education department, *The use of drugs as weapons: The concerns and responsibilities of healthcare professionals*, London: BMA, May 2007, at page 1.

<sup>124</sup> For a review see J P Perry Robinson, “Improving the governance regime for biological and chemical weapons”, a paper for the final session of the ESRC Research Seminar on *New Approaches to WMD Proliferation* held at the University of Sussex, UK, during 8-9 January 2007.



The point has been made many times both by detractors of NLW technology and by its advocates that “non lethal weapon” is generally a misnomer. The risk of mortality among people exposed to chemical NLW under operational conditions is unlikely to be reducible to zero. Addressing ‘tactical pharmacology’ in its recent report, the British Medical Association stated: “The agent whereby people could be incapacitated without risk of death in a tactical situation does not exist and is unlikely to in the foreseeable future.” Exactly why this should be so, the BMA report explained in some detail.<sup>125</sup> In the professional NLW literature, the term ‘less lethal technology’ is commonly used instead.

If 100 percent non-lethality is unattainable, is there any degree of non-lethality that might nevertheless be regarded as justifying harm to the regime against biological and chemical weapons? In the 1960s hey-day of ‘incapacitating’ chemical weapons, the borderline between them and ‘lethal’ chemical weapons was tacitly set at two percent anticipated mortality among people exposed.<sup>126</sup> There was never any question of the negotiators excluding such weapons from the CWC. Yet judging from the display of official Russian, American and British attitudes, states parties today seem not to find intolerable the 16 percent mortality among the hostages rescued from the Moscow theatre siege. As Robin Coupland of the International Committee of the Red Cross has pointed out, 16 percent is much the same mortality rate as is typically found among battlefield casualties of conventional bombs, bullets and artillery shell.<sup>127</sup>

The fact of the matter is, most probably, that degree of non-lethality in a weapon will rarely be the primary consideration when selecting it for counter-terrorist purposes. Only in cases where there are innocent bystanders is the possibly low lethality of disabling chemicals likely to be valued by users for the law-enforcement purpose of counterterrorism. Otherwise it is a combination of area-effectiveness and rapid onset of incapacitation that is the more likely to drive the choice of disabling chemicals in preference to other means.

The debate about chemical NLW is at root a debate about the propriety of encouraging a new category of chemical weapon at a time of progress, thanks to the CWC and the OPCW, towards a CW-free world. Within a sufficiently narrow frame of reference the new category takes on positive value: it affords a unique and possibly effective means of applying armed force against terrorists in situations where they are close to non-terrorists and where they have failed to equip themselves with protective respirators or medical antidotes. The question we are therefore obliged to answer is simple to state. Is that benefit, which is a tightly circumscribed one but a benefit nevertheless, great enough to justify damaging the still nascent chemical disarmament and non-proliferation regime? Or might opting for the benefit prove to be, as Mark Wheelis has put it, “a Faustian bargain”?<sup>128</sup>

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<sup>125</sup> BMA, *The use of drugs as weapons*, 2007, *supra*, note 123. See further: Lynn Klotz, Martin Furmanski and Mark Wheelis, “Beware the Siren’s song: why ‘non-lethal’ incapacitating chemical agents are lethal”, Scientists Working Group on Biological and Chemical Weapons, March 2003, [www.fas.org/bwc/papers/sirens\\_song.pdf](http://www.fas.org/bwc/papers/sirens_song.pdf); and Alan Pearson (*supra*, note 11) at pp 156-59.

<sup>126</sup> World Health Organization, *Public health response to biological and chemical weapons: WHO guidance* (Geneva: WHO, 2004) at page 181.

<sup>127</sup> The basis for his statement is in: R M Coupland, “Epidemiological approach to surgical management of the casualties of war”, *British Medical Journal* vol 308 (1994), pp 1693-97; and Robin M Coupland and David R Meddings, “Mortality associated with use of weapons in armed conflicts, wartime atrocities, and civilian mass shootings: literature review”, *British Medical Journal* vol 319 (1999), pp 407-10.

<sup>128</sup> Mark Wheelis, “‘Nonlethal’ chemical weapons: a Faustian bargain?”, *Issues in Science and Technology*, vol 19 no 3 (Spring 2003) pp 74-78.

We must also ask whether the regime itself provides opportunity or procedures for resolving such a fundamental dilemma. In principle it does. The opening paragraph of Article IX of the CWC states that

“States Parties shall consult and cooperate, directly among themselves, or through the Organization or other appropriate international procedures, including procedures within the framework of the United Nations and in accordance with its Charter, on any matter which may be raised relating to the object and purpose, or the implementation of the provisions, of this Convention.”

It was conflicting understandings of “object and purpose” that, as we have seen, contributed to the divergent interpretations of the law-enforcement exemption, meaning that the remedy offered by CWC Art IX.1 is available for use here. Moreover, for those who hold to the exclusionary interpretation of the exemption, CWC states-parties that have failed to declare holdings of non-RCA law-enforcement chemicals are in actual breach of the treaty, in which case there is also the remedy offered by CWC Art.IX.2:

“States Parties should, whenever possible, first make every effort to clarify and resolve, through exchange of information and consultations among themselves, any matter which may cause doubt about compliance with this Convention, or which gives rise to concerns about a related matter which may be considered ambiguous.”

The next step could be to involve the OPCW Executive Council by means of the procedure that the Article goes on to specify. Beyond that lies the possibility of challenge inspection.

At the present juncture, having to contemplate Article IX.2 or even challenge remedies does not reflect well on the regime. Yet something clearly has to be done, for a regime in which states parties pursue divergent implementation practices cannot remain stable for long. Even the much less confrontational remedy of Article IX.1 could expose a government that activated it to discouraging penalties. So until such a champion of the treaty steps forward to call for the cooperative consultative solution that is the logical and proper way forwards, other expedients must be found.

### ***Possible solutions***

With great prescience when presenting his first ‘Chairmans Text’ to the CWC negotiating body in June 1992, Ambassador von Wagner wrote in his Explanatory Note about the “real problem” presented by riot control agents:

“[They] would constitute an immediate risk and danger if they were allowed to develop into a new generation of non-lethal but nonetheless effective chemical agents of warfare, causing insurmountable problems in trying to distinguish in the ensuing grey area between ‘real’ and ‘non-lethal’ chemical weapons as well as between ‘real’ and ‘non-lethal’ chemical warfare units. Only in the last week of negotiations a point near consensus has been reached on this important issue touching upon the very scope of the Convention. It was possible because a common view has emerged among delegations that the preparation and application of any method of warfare dependent upon the toxic properties of chemicals should be banned under the Convention.”<sup>129</sup>

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<sup>129</sup> Chairman of the Ad Hoc Committee on Chemical Weapons, *Explanatory Note on the draft Chemical Weapons Convention contained in Document CD/CW/WP.400/Rev.1*, Conference on Disarmament document CD/CW/WP.414 dated 26 June 1992, pp 8-9.

The fact that no delegation voiced dissent then to what the Chairman had said is part of the reason now why there is, if not consensus, then a common view that RCAs are the only toxic chemicals the CWC allows for use in law enforcement. Herein surely lies a possible way forward.

To the two fundamental propositions of this paper, a supplementary one will therefore now be added: in thinking about alleviating measures, it is best to start from the defining feature of the CWC, which is its focus on *toxicity*.

Chemical weapons in the meaning of the Chemical Weapons Convention are “toxic chemicals” that do not satisfy the general purpose criterion -- Article II.1(a). Or they are munitions and devices “specifically designed to cause death or other harm through the toxic properties of those toxic chemicals” – Article II.1(b). Or they are any equipment “specifically designed for use directly in connection with the employment” of such munitions and devices – Article II.1(c). Purposes not prohibited under the Convention include “Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare” – Article II.9(c). So any weapon that exploits for its intended effects a property of a chemical other than its toxicity is not a chemical weapon in the sense of the CWC. Though flame weapons, smoke weapons, high-explosive weapons, projectile weapons, even nuclear weapons, depend on properties of chemicals, they are not dependent on the use of the toxic properties, so they are not “chemical weapons”. Toxicity, then, is a defining characteristic of prohibited chemical weapons. The Convention does not in fact define toxicity, but its definition of “Toxic chemical” in Article II.2 (quoted earlier, on page 8 above) clearly indicates that toxicity is to be taken as meaning any chemical action on life processes that can cause death, temporary incapacitation or permanent harm to human beings or other animals. There can be no dispute about the defining role of ‘toxicity’.

Therefore, no OPCW member state can legitimately claim that this or that toxic chemical falls outside the scope of the Convention. A holding of a toxic chemical may or may not satisfy the test of the general purpose criterion, in which case the *prohibitions* of the Convention may not or may apply to it, but, because the chemical displays the property of toxicity, it falls within the scope of the Convention, subject thereby to all the Convention’s various provisions whether permissive or prohibitory. To argue otherwise is to call into question the basic concept on which the Convention is built, impugning, thereby, the treaty itself. The defining feature of the treaty is the norm it establishes against weaponizing toxicity.

Is there room for argument about what ‘toxicity’ means? That is an important and rarely asked question. What can be asserted from the language of the Convention is, first, that toxicity in the sense of the Convention may take both lethal and non-lethal forms; second, that its effects may be permanent or temporary; and, third, that it results from chemical action on life processes. Does this mean that malodorants, for example, are toxic chemicals within the meaning of the Convention? If not, could the reason for excluding malodorants from the definition also be applied to sensory irritants? Probably not, for the ordinary meaning of ‘toxicity’ conveys an idea of physiological harm, which surely does not include the sensation of a nasty smell.

With these thoughts about toxicity as the defining characteristic of chemical weapons in mind, let us now return to the historical part of the present paper. A conclusion that may be drawn from it is that the problem of ‘law enforcement’ arose chiefly from the desire of a number of the CWC negotiating partners to keep riot control agents out of the treaty. This brought about the compromise that resulted in ambivalent transparency provisions for law-enforcement chemicals and the

consequent uncertainty, having regard to the object and purpose of the CWC, about how ‘law enforcement’ was now to be interpreted.

It may be that the passage of time has diminished the sensitivity of the RCA issue. At least the wounds of the Vietnam War are now healing. It may also be that the CWC’s main remedy for the ‘dual use’ problem is more appreciated for its applicability to the RCA issue than perhaps it was originally, for the ‘general purpose criterion’ is now becoming valued also as the chief instrument for bringing the CWC to bear on chemical terrorism. The problem of ‘law enforcement’ may therefore have become more tractable. Perhaps the moment is arriving for head-on solutions to the problem.

One such remedy would be to establish a requirement under the CWC that states parties declare to the OPCW the identity of all chemicals they hold for law enforcement purposes, whether they be RCAs or other types of chemical that the CWC does not define.<sup>130</sup> But there is a twofold problem with this proposal. First, to advocate any such amendment would be to accept that the law-enforcement provisions of the CWC permitted the use of toxic chemicals other than RCAs for purposes of law enforcement. Perhaps, in the aftermath of the Moscow theatre siege, states parties are moving towards accepting such an interpretation. Yet there is no evidence that such acceptance, if indeed it is happening, reaches much beyond circles where there are interests other than humanitarian interests vested in NLW, and still less is there evidence that it constitutes consensus among CWC states parties. In the absence of such consensus, proposals predicated upon its existence<sup>131</sup> can amount to little more than disguised or unwitting advocacy of the open-ended interpretation of the law-enforcement exemption. The second problem with the proposal is a procedural one. The proposed remedy would probably necessitate formal amendment of Article III of the Convention, not simply a technical change. Some sort of politically binding commitment to declare non-RCA law-enforcement chemicals to the OPCW might perhaps be contemplated instead, but would any such confidence-building measure in fact achieve the disclosure sought?

An alternative remedy is therefore proposed here. It has two elements:

- First, the OPCW Scientific Advisory Board should be tasked to report on the meaning of the word ‘toxic’ as used in the text of the CWC. Such SAB deliberation would necessarily take in the considerations regarding toxicity that have just been related. They would also need to determine whether the wording *chemical action on life processes* that the CWC uses to describe toxicity needs clarification or elaboration.
- Second, under one of the OPCW policy organs an open-ended working group should be established with a mandate to develop guidelines that would help resolve practical problems arising from the law-enforcement exemption set out in CWC Article II.9(d). Examples of such guidelines might perhaps include the following:<sup>132</sup>

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<sup>130</sup> The Harvard Sussex Program proposed this remedy during the run-up to the First CWC Review Conference; see *The CBW Conventions Bulletin* no 58 (December 2002), pp 1-2, editorial: “‘Law Enforcement’ and the CWC”.

<sup>131</sup> For example, Donald A Neill, *Riot Control and Incapacitating Chemical Agents under the Chemical Weapons Convention*, Defence R&D Canada, Centre for Operational Research and Analysis, technical memorandum DRDC CORA TM 2007-22, Ottawa, 21 June 2007. However, Neill expressly recognises the necessity of that consensus, and his paper considers ways for securing it.

<sup>132</sup> These examples are from Chayes & Meselson, *supra*, note 9, which provides additional explanation of them.

1. The term 'law enforcement' in Article II.9(d) means actions taken within the scope of a state-party's jurisdiction to enforce its national law, as that expression is understood in international law. When such actions are taken in the context of law-enforcement or riot-control functions under the authority of the United Nations, they must be specifically authorized by that organization. No act is one of 'law enforcement' if it otherwise would be prohibited as a 'method of warfare' under Article II.9(c).
2. The uses of toxic chemicals prohibited as 'methods of warfare' include any use of toxic chemicals by virtue of their toxic properties against enemy combatants (whether regulars or irregulars), and any use of toxic chemicals by virtue of their toxic properties against noncombatants if designed to advance a specific military objective in war.
3. A toxic chemical used by virtue of its toxic properties is only of a type consistent with the purpose of law enforcement, in the sense of Article II.1(a), if it meets the Convention's definition of a 'riot control agent' in Article II.7, including, therefore, chemicals whose disabling physical effects do not result from sensory irritation but which disappear within a short time following termination of exposure.

No doubt there are several more possibilities. The important thing is that a multilateral process be established, preferably by the Conference of the States Parties, in order to keep the search for a solution to the problem well and truly alive.