

Depleted uranium weapons: the next target for disarmament?

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Disarmament efforts have reaped a number of notable successes over the past years. These endeavours have not been completely random, but have generally aimed at putting beyond use and out of circulation weapons that may breach the law of armed conflict (LOAC).¹ States moved from banning chemical weapons in 1993 to outlawing blinding lasers in 1995, and then anti-personnel mines in 1997.² The latest disarmament campaign has succeeded in prohibiting cluster munitions (for those states that join the 2008 Convention on Cluster Munitions).³ Which problematic weapons should be next in line for a treaty ban or restriction? Many believe that prime candidates are weapons containing depleted uranium.⁴

Depleted uranium's military applications and utility

A by-product of the uranium enrichment process, depleted uranium (DU) is an extremely dense material, which is alloyed with other metals principally to make armour-piercing ammunition and to harden armour used to shield military vehicles.⁵ Armour-piercing incendiary projectiles that contain DU are designed to penetrate hard targets, such as tanks, armoured personnel carriers and concrete bunkers. The DU penetrator contains no explosive charge but relies on kinetic energy; its density and velocity allow it to bore through targets without buckling or losing much speed.⁶ The energy and heat released when the DU comes into contact with air inside the target cause it to ignite. The crew risks death or disablement from the spalling and fire inside the target, which may explode if a vehicle's fuel tanks ignite.

Although approximately 18 states⁷ possess or are developing DU ammunition, most DU has been shot by the United Kingdom and the United States.⁸ Both states claim that the use of DU ammunition is militarily necessary on account of its superior ability to penetrate hard armour compared with tungsten (the main alternative).⁹ Depleted uranium is also cheaper to purchase than tungsten and more widely available. Moreover, its density and velocity mean that pilots who air-deliver DU can shoot at a greater distance from their targets, increasing their safety.¹⁰

The controversy surrounding the use of depleted uranium

DU's military applications have provoked controversy since the weapon's first battlefield testing during the 1991 Gulf War.¹¹ After that conflict, some persons who either did or might have come into contact

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with DU metal or dust, either directly or indirectly, began to exhibit a host of pathologies, which have collectively come to be known as Gulf War Syndrome.¹² After subsequent military uses of DU in the Balkans, a range of illnesses, collectively dubbed "Balkan War Syndrome", was reported among some military personnel.¹³ None of these conditions have ever been conclusively linked with DU,¹⁴ and those states that consider its use militarily necessary have dismissed any suggestion that exposure to DU might be a causal factor.¹⁵ But, as Fahey notes, "[a]bsence of evidence should not be interpreted as evidence of absence, however, as there have been few long-term health studies of soldiers or civilians with confirmed DU exposure."¹⁶ Nor have there been comprehensive epidemiological studies where DU has been used, i.e. Afghanistan, Bosnia, Iraq, Kosovo, Kuwait and Serbia.

Despite the current knowledge gaps regarding the effects of exposure to DU, given what is already known about the substance it would be negligent to discount it as a possible causal factor. It is beyond dispute that DU is toxic and radioactive,¹⁷ and is known to be hazardous for human health in certain exposure scenarios.¹⁸ Those persons at greatest risk are personnel inside targets struck by a DU penetrator or those that enter such targets immediately afterwards.¹⁹ Civilians living close by hit sites may also be at risk. A growing body of evidence links DU exposure with pathologies in laboratory animals and human cells, and the limited testing that has been carried out indicates that contact with high levels of DU may cause pathologies such as kidney damage and cancer.²⁰

Depleted uranium's current status under disarmament law

It has been posited that DU weapons are already prohibited by international law, despite the absence of a discrete disarmament treaty.²¹ DU weapons do share some properties of weapons (both conventional and weapons of mass destruction) already addressed by arms control law. However, even if DU weapons can be toxic and radioactive, or can have incendiary or poisonous effects, that does not mean that they meet the legal definitions of nuclear, radiological, toxin, chemical, poison or incendiary weapons. Generally speaking, under international law, the defining feature of all of these types of weapons is that they are specifically designed (and/or used) to kill or injure by means of their particular characteristic property, and this is not the case for DU weapons.

DU WEAPONS ARE NOT NUCLEAR WEAPONS

As there is no international convention prohibiting nuclear weapons, there is no universally agreed definition. However, it seems from existing controls on the manufacture and use of nuclear weapons that depleted uranium armaments cannot be considered as nuclear weapons.

Protocol III to the Modified Brussels Treaty of 1954 on the Control of Armaments defines an atomic weapon as "any weapon which contains, or is designed to contain or utilise nuclear fuel or radioactive isotopes and which, by explosion or other uncontrolled nuclear transformation of the nuclear fuel, or by radioactivity of the nuclear fuel or radioactive isotopes, is capable of mass destruction, mass injury or mass poisoning".²² Article 1(c) of the Treaty on the Southeast Asia Nuclear Weapon-Free Zone defines a nuclear weapon as "any explosive device capable of releasing nuclear energy in an uncontrolled manner but does not include the means of transport or delivery of such device if separable from and not an indivisible part thereof".²³

DU weapons are not explosive devices. Nor are they used with the purpose of killing by radiation. It is unsettled whether they are capable of mass destruction, mass injury or mass poisoning. In any event, the International Court of Justice (ICJ) in its Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons* found that "[t]here is in neither customary nor conventional international law any comprehensive and universal prohibition of the threat or use of nuclear weapons as such".²⁴

DU WEAPONS ARE GENERALLY NOT RADIOLOGICAL WEAPONS

Radiological or radiation weapons are designed to kill or injure as a direct consequence of dispersing radiation—usually by means of an explosion—and inducing radiation sickness. An example of such a weapon is a so-called dirty bomb. While armour-piercing projectiles containing DU may spread radiation as a secondary effect of penetrating targets, it is not the primary purpose and effect of their use. However, one cannot exclude the possibility of DU being used in a dirty bomb with the express intention of indiscriminately killing civilians. Thus, a DU weapon could conceivably be considered as a radiological weapon in some (limited) cases.

DU WEAPONS ARE NOT CHEMICAL WEAPONS

DU weapons do not appear to meet the definition of chemical weapons set out in Article II of the 1993 Chemical Weapons Convention (CWC). DU is not among the toxic chemicals or their precursors listed in the Annex on Chemicals to the CWC. Nor are DU weapons specifically designed to cause death or other harm through the toxic properties of toxic chemicals and their precursors. While the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (1925 Gas Protocol) does not specifically require these effects to be primary and not secondary or unintended results of the use of a weapon, the majority of jurists consider this requirement to be implied.²⁵ In the case of DU, its chemically toxic effects are a side-effect of its combat use.

DU WEAPONS ARE NOT BIOLOGICAL OR TOXIN WEAPONS

DU weapons do not fit the definition of biological weapons as laid down in the 1972 Biological and Toxin Weapons Convention (BTWC), as it is concerned with "[m]icrobial or other biological agents or toxins" and "[w]eapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict." (Article I.) Although the BTWC does not define bacteriological (biological) weapons, it is accepted that they refer to weapons that spread living organisms, which can kill or injure when used for hostile purposes.²⁶

DU WEAPONS AS CONVENTIONAL WEAPONS

Few conventional weapons are addressed by arms control law. And depleted uranium weapons cannot be considered among the ones that are, including those that they ostensibly most closely resemble, namely incendiary and poison weapons.

DU weapons are not incendiary weapons

Protocol III of the Convention on Certain Conventional Weapons states that incendiary weapons do *not* include munitions designed to combine penetration, blast or fragmentation effects with an additional incendiary effect, such as armour-piercing projectiles, fragmentation shells, explosive bombs and similar combined-effects munitions in which the incendiary effect is not specifically designed to cause burn injury to persons, but to be used against military objectives, such as armoured vehicles, aircraft and installations or facilities (Article 1(1)(b)(ii)). This clearly excludes DU munitions.

DU weapons are not poison weapons

Poison or poisonous weapons are those that are specifically designed or intended to have this effect. According to the ICJ, such weapons "...have been understood, in the practice of States, in their ordinary sense as covering weapons whose prime, or even exclusive, effect is to poison or asphyxiate."²⁷ Any toxicological effects of DU are secondary and incidental. As the ICJ was unwilling to find nuclear weapons to be poison weapons,²⁸ perforce the definition would exclude DU weapons, whose toxicological effects are relatively less pronounced.

Depleted uranium use as a violation of the law of armed conflict?

As DU is not the subject of any existing disarmament agreement, currently the only possible restrictions on its use arise under LOAC. With the exception of poison weapons²⁹ and expanding bullets,³⁰ LOAC does not impose any absolute prohibition on the use of any weapon. This means that the legality of the use of any weapon under LOAC is case specific.

In battle, the use of weapons is largely guided by the principle prohibiting superfluous injury and unnecessary suffering to combatants and the principles of distinction and proportionality. It is these principles of LOAC that are in any case of most practical relevance to DU use.

THE PRINCIPLE PROHIBITING SUPERFLUOUS INJURY AND UNNECESSARY SUFFERING TO COMBATANTS

This "cardinal principle" of LOAC³¹ prohibits the use of weapons of a nature or designed to cause (that have the effect of causing)³² superfluous injury or unnecessary suffering to enemy combatants.³³ There is a minimum threshold of injury or suffering that could potentially be considered as superfluous and unnecessary, i.e. "a harm greater than that unavoidable to achieve legitimate military objectives".³⁴ For example, if a weapon needlessly aggravates the suffering of personnel who will be killed anyway, or if it renders their death inevitable where it is not necessary to kill them, it would have crossed this threshold.³⁵ But even then, whether this is considered as superfluous injury or unnecessary suffering will depend on the military necessity of the weapon's use. If the weapon provides a military advantage not otherwise available, the suffering and injury will be justified because it is necessary and not superfluous.

A bone of contention is whether this principle applies only to anti-personnel weapons or also anti-materiel weapons.³⁶ If it were to be considered to apply only to the former, it would mean that LOAC would offer few restrictions on the use of DU weapons vis-à-vis combatants, given that it is mainly designated and used as an anti-materiel weapon. But, arguably, the principle can be and is applied to both types of weapons, both at the point of legal review of a weapon and during military operations.³⁷

If the principle were to be applied to DU weapons used against both materiel and personnel, the test would be: does the suffering and injury caused to combatants go beyond the required threshold? In that case, is it necessary (and therefore not superfluous) because no other weapon can match or outperform a DU weapon? It is difficult to answer either of these questions categorically in the affirmative when DU is used against materiel. The gaps in knowledge regarding DU's effects mean that it cannot yet be asserted with certainty that DU will permanently disable combatants in all cases of its use, or render their death inevitable, and the user states claim that no alternative munition exists with comparable military utility. Still, in the majority of cases of its use, tungsten would in fact suffice. As there seems to be no military necessity for using DU against personnel, provided that the suffering

and injury caused to combatants exceeds the minimum threshold, DU use could be considered as breaching the principle as there are many more effective ways of disabling combatants.

THE PRINCIPLE OF DISTINCTION, INCLUDING THE PROPORTIONALITY PRINCIPLE

Although DU use per se cannot be said to violate the principle of distinction between combatants and civilians (codified in Article 51 of 1977 Additional Protocol I to the Geneva Conventions), arguably, in certain cases, its use might constitute an indiscriminate attack. "Since the use of DU weapons in combat results in an uncontrolled release of DU",³⁸ it is "a method or means of combat the effects of which cannot be limited", a definition of discriminate attack according to Article 51(4)(c) of Additional Protocol I. When used against military objectives in urban areas, it is impossible to spatially restrict DU's spread. Considering that most DU falls within 50m of its release, but that it can travel up to 400m from the hit site immediately following an impact,³⁹ any civilian within this radius runs the risk of being exposed to its radioactive and toxic effects.

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Regarding another relevant definition of indiscriminate attack, it is difficult to be categorical about whether the use of DU weapons against military objects could cause disproportionate civilian casualties in any case of their use,⁴⁰ due to the lack of complete certainty regarding the effects of DU weapons and the difficulty in concluding whether these are then excessive compared to the military necessity of their use.

THE PRINCIPLE OF PRECAUTION

Parties to armed conflicts are required to ensure that precautions are taken in planning and conducting military operations to minimize their effects on civilians (Article 57 of 1977 Additional Protocol I). Of particular relevance are Article 57(2)(a)(ii), requiring military commanders to "take all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects" and Article 57(2)(a)(iii), requiring parties to "refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated". Along with Article 51(4)(c), this could provide a legal basis for restricting the use of DU.

Parties to an armed conflict are also obliged, to the extent feasible, to take the necessary precautions to protect the civilian population, individual civilians and civilian objects under their control against the dangers resulting from military operations (Article 58(c) of 1977 Additional Protocol I). This could provide some legal basis for requiring states to take certain remediation measures in the aftermath of the use of DU weapons to reduce the dangers to civilians.

Time for a ban on depleted uranium weapons?

DU-containing projectiles are not banned or restricted under conventional or customary disarmament law. The legality of using DU weapons during the conduct of hostilities is case specific. In relation to combatants, there is room to argue that their use might in some cases violate the principle prohibiting causing superfluous injury and unnecessary suffering, particularly when used in an anti-personnel capacity, and even potentially in some cases of anti-materiel use where an alternative weapon

would suffice. DU use could in some cases potentially violate the principle of distinction, such as when used in heavily populated areas where civilians risk being exposed, given the weapon's indiscriminate nature.

The only way to ensure maximum safety for enemy and friendly troops and the civilian population is for user states to observe a moratorium on the use of DU weapons.

Given what is already known about DU's toxicity and radioactivity, an approach that is predicated on hoping for the best but planning for the worst would mean the cessation of all use of DU weapons until a more complete picture of their effects is revealed. After all, if the worst-case scenario proves true, we will find it very difficult to remove all traces of DU that have already been released.⁴¹ The only way to ensure maximum safety for enemy and friendly troops and the civilian population is for user states to observe a moratorium on the use of DU weapons pending further research, or to ban their use and dissemination.

As user states seem unlikely to adhere voluntarily to a moratorium, the best way forward is for other states and civil society to make depleted uranium weapons the next target for a disarmament treaty and to vigorously campaign to that end. Although it is true that user states might seem as unlikely to join a treaty banning the possession and use of DU weapons as they would be to observe a moratorium, a disarmament campaign culminating in a ban would increase the opprobrium attached to the use of such weapons—even for non-states parties—and limit their proliferation. Could this be the moment when the campaign to prohibit the possession and use of DU weapons gets legs? Perhaps, if recent developments are any indication. In December 2007, the UN General Assembly passed its first resolution concerning DU weapons, which called on the "Secretary-General to seek the views of Member States and relevant international organizations on the effects of the use of armaments and ammunitions containing depleted uranium".⁴² On 22 May 2008, the European Parliament issued its strongest resolution yet dealing with depleted uranium, in which it reiterated "its call on all EU Member States and NATO countries to impose a moratorium on the use of depleted uranium weapons and to redouble efforts towards a global ban".⁴³

Notes

1. "When adopting the Convention on Certain Conventional Weapons and the Ottawa Convention banning anti-personnel landmines, States were basing themselves on the prohibition of 'weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering' (emphasis added)." J.-M. Henckaerts and L. Doswald-Beck, 2005, *Customary International Humanitarian Law, Volume 1: Rules*, Cambridge, Cambridge University Press and International Committee of the Red Cross (ICRC), p. 242.
2. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (Chemical Weapons Convention), adopted 13 January 1993, entry into force 29 April 1997; Protocol on Blinding Laser Weapons, Protocol IV of the Convention on Certain Conventional Weapons, adopted 13 October 1995, entry into force 30 July 1998; Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (Mine Ban Treaty), adopted 18 September 1997, entry into force 1 March 1999.
3. Adopted on 30 May 2008, at <www.clusterconvention.org/convention/text/english/#toc-convention-on-cluster-munitions>.
4. This paper uses the term "weapon" in its most generic sense, to refer to all armaments containing depleted uranium, that is, both munitions and armour.
5. For a discussion of the military uses of DU, see Dan Fahey, 2008, "Depleted Uranium and Its Use in Weapons", in Avril McDonald, Jann K. Kleffner and Brigit Toebe (eds), *Depleted Uranium and International Law: A Precautionary Approach*, The Hague, TMC Asser Press, p. 3.
6. APFSDS Ammunition - Armoured Piercing Fin-Stabilised Discarding Sabot, *army-technology.com*, no date, at <www.army-technology.com/contractors/ammunition/apfsds.htm>.
7. Bahrain, China, Egypt, France, India, Israel, Kuwait, Oman, Pakistan, Russian Federation, Saudi Arabia, Taiwan, Thailand, Turkey, Ukraine, United Arab Emirates, United Kingdom and United States. Fahey, op. cit., pp. 8–9.
8. Fahey, op. cit., pp. 8–19, 12–14.

9. Ministry of Defence, 2001, *Memorandum: Gulf War Illnesses*, presented to the House of Commons Defence Select Committee on 26 April 2001, London, HMSO, p. 37. Department of the Air Force, Headquarters United States Air Force, *JA letter to AF/RDF, Subject: Legal Review of 30 mm Ammunition*, 14 March 1975, with attached legal memorandum; Department of the Army, Office of the Judge Advocate-General, *DAJA-IO Memorandum for US Army Armament Research, Development and Engineering Center, Subject: M829A2 Cartridge, 120 mm APFSDS (Depleted Uranium Tank Round); Law of War Review*. For a discussion see B. Carnahan, 2008, "A Military View on Depleted Uranium", in McDonald et al., op. cit., pp. 99, 104–110.
10. For a discussion of the military utility of DU see Carnahan, 2008, op. cit.
11. Fahey, 2008, op. cit., pp. 12–13.
12. "Iraq: The DU Dust Settles", *Jane's Defence News*, 2 April 2004; "A 'Silver Bullet's Toxic Legacy", *The Christian Science Monitor*, 20 December 2002; "Iraqi Cancers, Birth Defects Blamed on U.S. Depleted Uranium", *The Seattle Post-Intelligencer*, 20 November 2002.
13. "Depleted Uranium: EU Concern Grows", *BBC News*, 6 January 2001.
14. The Royal Society, 2002, *The Health Hazards of Depleted Uranium Munitions: Part II*, London, p. vii; A. Marusic and S. Ramsay, 2001, "NATO Doctors Question 'Balkan War Syndrome'", *The Lancet*, vol. 357, no. 9251, p. 201.
15. "Pentagon Officials Say Depleted Uranium Powerful, Safe", *Armed Forces Press Service*, 14 March 2003, at <www.defenselink.mil/news/newsarticle.aspx?id=29292>.
16. Dan Fahey, 2008, "Environmental and Health Consequences of the Use of Depleted Uranium Weapons", in McDonald et al., op. cit., pp. 29, 64–71.
17. Royal Society, op. cit., p. vii; DU has been described as a "low level alpha radiation emitter which is linked to cancer when exposures are internal, chemical toxicity causing kidney damage. ... Aerosol DU exposure to soldiers on the battlefield could be significant with potential radiological and toxicological effects." Report prepared by the US Army Production Base Modernisation Activity, Picatinny Arsenal, New Jersey, July 1990; "When soldiers inhale or ingest DU dust, they incur a potential increase in cancer risk. ... Expected physiological effects from exposure to DU dust include possible increased risk of cancer (lung or bone) and kidney damage", Col. Robert G. Claypool, director of Professional Services, *Memo from US Army Chemical Medical School on Depleted Uranium Safety Training*, 18 August 1993; "Strong evidence exists to support [a] detailed study of potential DU carcinogenicity", Dr David McClain, US military depleted uranium researcher, speaking to a presidential committee investigating Gulf War illnesses, quoted in D. Fahey, 2001, "The Final Word on Depleted Uranium", *Fletcher Forum of World Affairs*, vol. 25, no. 2, p. 197.
18. Such as when it enters the body through inhalation of DU dust or injection of DU fragments. See Fahey, 2008, op. cit., pp. 41–48.
19. The Royal Society, 2001, *The Health Hazards of Depleted Uranium Munitions: Part I*, London, p. 5.
20. For details, see Fahey, 2008, op. cit..
21. According to the author of a working paper on depleted uranium and other weapons that was prepared for the UN Sub-Commission on the Promotion and Protection of Human Rights, depleted uranium and the other weapons that formed the subject of his paper "should be considered banned, whether or not there is a specific treaty banning them". *Human Rights and Weapons of Mass Destruction, or with Indiscriminate Effect, or of a Nature to Cause Superfluous Injury or Unnecessary Suffering*, Working Paper submitted by Y.K.J. Yeung Sik Yuen, UN document E/CN.4/Sub.2/2003/35, 2 June 2003, paragraph 55.
22. Protocol III of the Modified Brussels Treaty, signed 23 October 1954, Annex II, paragraph I(a).
23. Treaty on the Southeast Asia Nuclear Weapon-Free Zone, signed at Bangkok, 15 December 1995, at <www.aseansec.org/2082.htm>.
24. International Court of Justice, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion of 8 July 1996, paragraph 105.
25. See Guido den Dekker, 2008, "The Law of Arms Control and Depleted Uranium Weapons", in McDonald et al., op. cit., pp. 75, 86–87; Stefan Oeter, 1995 "Methods and Means of Combat", in Dieter Fleck (ed.), *The Handbook of Humanitarian Law in Armed Conflicts*, Oxford, Oxford University Press, paragraph 434.
26. Den Dekker, op. cit., p. 86; Oeter, op. cit., paragraph 439.
27. International Court of Justice, op. cit., paragraph 55.
28. *Ibid.*, paragraphs 54–56.
29. Instructions for the Government of Armies of the United States in the Field of 1863 (Lieber Code), Article 70; Brussels Project of an International Declaration concerning the Laws and Customs of War of 1874, Article 13(a); Laws of War on Land of 1880 (Oxford Manual), Article 8(a); The Hague Convention (II) with Respect to the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land of 1899, Article 23(a); The Hague Declaration (IV, 2) Concerning Asphyxiating Gases of 1899; The Hague Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land of 1907, Article 23(a); Treaty Relating to the Use of Submarines and Noxious Gases in Warfare of 1922, Article 5.
30. The Hague Declaration (IV, 3) of 1899 declared it illegal to use bullets that expand or flatten easily in the body.
31. International Court of Justice, op. cit., paragraph 78.

32. Henckaerts and Doswald-Beck, *op. cit.*, pp. 240, 242.
33. The term is used here in its broadest sense, to mean anyone who participates in hostilities, regardless of whether or not they are entitled to the privileges of combatancy. See Henckaerts and Doswald-Beck, *op. cit.*, p. 3.
34. International Court of Justice, *op. cit.*, paragraph 78.
35. St Petersburg Declaration; the ICRC says that "A relevant factor in establishing whether a weapon would cause superfluous injury or unnecessary suffering is the inevitability of serious permanent disability." Henckaerts and Doswald-Beck, *op. cit.*, p. 241.
36. Marten Zwanenburg opines that "There are good arguments for applying the principle to anti-materiel as well as to anti-personnel weapons." However, he concludes that, "these considerations do not represent current international law on the issue...". "The Use of Depleted Uranium and the Prohibition of Weapons of a Nature to Cause Superfluous Injury or Unnecessary Suffering", in McDonald et al., *op. cit.*, pp. 111, 117.
37. For a discussion see Avril McDonald, 2008, "Averting Foreseeable and Unexpected Damage: The Case for a Precautionary Approach vis-à-vis Depleted Uranium Weapons", in McDonald et al., *op. cit.*, pp. 281, 285–286.
38. Fahey, 2008, *op. cit.*, p. 7.
39. Fahey notes that "About 90 percent of the DU dust created by the impact of a tank round against a hard target falls to the ground within 50 metres of the target, although airborne DU has been found up to 400 metres from the impact site immediately following an impact." Fahey, 2008, *op. cit.*, p. 31.
40. Contrary to Article 51(5)(b) of 1977 Additional Protocol I to the Geneva Conventions.
41. Given that DU, once released, contaminates the air, soil and water. See Fahey, *op. cit.*, pp. 33–41. It should also be remembered that since DU has a half-life of 4.5 billion years it decays extremely slowly (Federation of American Scientists Military Analysis Network, *Depleted Uranium*, 29 April 1999, at <www.fas.org/man/dod-101/sys/land/du.htm>).
42. UN General Assembly resolution 62/30 of 5 December 2007, UN document A/RES/62/30, 10 January 2008, paragraph 1.
43. Approved by 491 votes in favour, 18 against and 12 abstentions. European Parliament resolution of 22 May 2008 on (depleted) uranium weapons and their effect on human health and the environment – towards a global ban on the use of such weapons, document P6_TA(2008)0233.