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KILLING AND CLEANING IN COMBAT: A PROPOSAL TO EXTEND THE FOREIGN CLAIMS ACT TO COMPENSATE FOR LONG-TERM ENVIRONMENTAL DAMAGE

MARK D. SAMEIT*

INTRODUCTION

Like it or not, warfare has been a constant throughout human history.¹ As technology has progressed, so too has the destruction wrought by warfare on the environment.² With the introduction of nuclear weapons at the end of World War II,³ the possibility of near-permanent environmental damage became real, and the need to contain mankind's methods of warfare became evident.⁴

Following World War II, the threat of mutually assured destruction prevented any global environmental catastrophes;⁵ however, true international concern over the impact of war on the environment did not begin

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¹ See generally JARED M. DIAMOND, *GUNS, GERMS & STEEL* (1999) (recounting the development of civilization and warfare).

² See *infra* Part I (recounting a brief history of warfare's destructiveness).

³ See generally *Mystery in the Desert*, *NEWSWEEK*, Mar. 22, 1999, at 30 (providing a brief history of the development of nuclear weapons).

⁴ See SAMUEL GLASSTONE & PHILIP J. DOLAN, *THE EFFECTS OF NUCLEAR WEAPONS* 387-450 (3d ed. 1977), available at <http://www.princeton.edu/~globsec/publications/effects/effects.shtml> (outlining the contamination from radioactive fallout); see also Hyun S. Lee, *Post Trusteeship Environmental Accountability: Case of PCB Contamination on the Marshall Islands*, 26 *DENV. J. INT'L L. & POL'Y* 399, 405-08 (1998) (discussing the history of nuclear weapons testing and the permanent destruction of some Marshall islands).

⁵ See generally Owen Matthews, *Russian Nukes Redux; Looking to Recapture Lost Glory, Moscow is Building a New Nuclear Warhead Designed to Evade U.S. Defenses*, *NEWSWEEK*, Feb. 13, 2006, at 10 (inferring that the threat of mutually assured destruction prevented nuclear warfare and that the U.S. building of nuclear missile defenses upsets that balance of power).

until the Vietnam War.⁶ Vietnam brought the issue to light because it corresponded with the rise of the environmental movement in the United States. Vietnam also foreshadowed the possibility of greater environmental disasters if countries continued to modify or destroy the environment as a method of warfare.⁷ In the aftermath of the Vietnam War, the international community recognized the need for environmentally conscious treaties and negotiated numerous agreements with the specific intent of protecting the environment.⁸

Since the Vietnam War, the environment has been a major issue of contention in the United States in almost every conflict.⁹ While the United States Military is constantly attempting to adapt to ever-changing societal environmental norms, criticism still abounds. Today, environmental groups level three primary criticisms against the United States Military: (1) the use of depleted uranium in its weapons; (2) the failure rate of cluster bombs and its associated lethality, and; (3) the environmental impact of the destruction of some of its targets.¹⁰

This Note discusses the environmental problems faced in modern warfare and the international attempts to limit the destruction of the environment, and proposes a domestic solution through the Foreign Claims Act. Part I of this Note lays out the historical background behind environmental law in warfare with a special focus on the Vietnam War, which triggered the first international attempts to limit warfare's effect on the environment. Part II discusses the international treaties in effect since the Vietnam War that limit environmental destruction, including the Environmental Modification Treaty, Additional Protocols I and II to the Geneva Convention, and other weapons-specific treaties. Part III then

⁶ Michael N. Schmitt, *Green War: An Assessment of the Environmental Law of International Armed Conflict*, 22 YALE J. INT'L L. 1, 9 (1997).

⁷ ARTHUR H. WESTING, *ECOLOGICAL CONSEQUENCES OF THE SECOND INDOCHINA WAR* 1 (1976).

⁸ See Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Technique, *opened for signature* May 18, 1977, 31 U.S.T. 333 [hereinafter ENMOD Treaty]; Protocol Additional to the Geneva Conventions of 12 August, 1949, and Relating to the Protection of Victims in International Armed Conflict (Protocol I), *adopted* June 8, 1977, 1125 U.N.T.S. 3 [hereinafter Protocol I]; Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), *adopted* June 8, 1977, 1125 U.N.T.S. 609 [hereinafter Protocol II].

⁹ See Laurent R. Hourcle, *Environmental Law of War*, 25 VT. L. REV. 653, 657-58 (2001).

¹⁰ See Pekka Haavisto, *The International Responses to the Environmental Impacts of War: Keynote Address*, 17 GEO. INT'L ENVTL. L. REV. 570, 573-83 (2005).

discusses the Foreign Claims Act, how it operates, and its current limitations. Finally, Part IV proposes a modification to expand the Foreign Claims Act to allow the military to compensate victims of long-term environmental damage and incorporate environmental costs into its decisionmaking. Part IV then applies this proposed modification to the three largest environmental criticisms leveled against the United States Military and articulates the potential long-term beneficial effects.

I. HISTORY OF ENVIRONMENTAL WARFARE

History is replete with familiar examples of environmental damage during warfare. One of the earliest and most familiar examples of environmental warfare was the Romans salting the fields of Carthage during the Third Punic War in 146 B.C.¹¹ Likewise in 1346 A.D., the Tartars implemented the first large-scale use of biological warfare by catapulting plague-infested bodies into the city of Kaffa.¹² During Napoleon's advance on Moscow, Russian citizens burned their own homes and the surrounding forests to prevent the French army from obtaining supplies.¹³ Sherman's March to Atlanta during the American Civil War burned over four million hectares, and the impact on the flora in Georgia is still visible today.¹⁴

World War II arguably saw the gravest damage to the environment as countries fought by every available means.¹⁵ The Chinese destroyed their own Huayuankow Dam, flooded hundreds of thousands of hectares, and killed hundreds of thousands of their own citizens in an effort to stop the Japanese onslaught.¹⁶ The Allied firebombing of Germany and Japan left entire cities flattened and hundreds of thousands dead.¹⁷ Even today,

¹¹ Frank R. Finch, *This Land Is Our Land: The Environmental Threat of Army Operations*, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT 100, 102 (Grunawalt et al. eds., 1996) (describing ancient examples of environmental warfare).

¹² Nahal Kazemi, *Ill at Ease: The Precarious State of the Biological Weapons Convention's Proposed Enforcement Regime*, 17 FLA. J. INT'L L. 137, 143 (2005).

¹³ Marc A. Ross, *Environmental Warfare and the Persian Gulf War: Possible Remedies to Combat Intentional Destruction of the Environment*, 10 DICK. J. INT'L LAW 515, 517 (1992).

¹⁴ Finch, *supra* note 11, at 104.

¹⁵ See generally Stephen Dycus, *Nuclear War: Still the Gravest Threat to the Environment*, 25 VT. L. REV. 753 (2001).

¹⁶ Aaron Schwabach, *Environmental Damage Resulting from the NATO Military Action Against Yugoslavia*, 25 COLUM. J. ENVTL. L. 117, 134 (2000).

¹⁷ Mark J. Osiel, *Ever Again: Legal Remembrance of Administrative Massacre*, 144 U. PA. L. REV. 463, 553 n.343 (1995).

the threat of unexploded ordnance exists throughout central Europe and Japan from the round-the-clock Allied bombing of Axis cities and military targets.¹⁸ Finally, the United States' use of the atomic bomb in the Japanese cities of Hiroshima and Nagasaki ended the Second World War but began a whole host of new environmental issues with the subsequent arms race and above-ground nuclear testing.¹⁹

Vietnam saw both the pinnacle of military ingenuity in environmental warfare and the beginning of domestic and international backlash from the destruction of the environment.²⁰ In order to combat Vietcong guerilla tactics, the United States developed a number of tactics to reduce enemy cover in the thick forests and slow down enemy troop movements.²¹ These strategies decimated over ten percent of the total Vietnamese jungles and left lasting effects that are still visible today.²²

The United States' first and best known tactic was the dropping of herbicides over South Vietnam in an effort to destroy the enemy's cover for troop movement. This deforestation involved the now-infamous "Agent Orange" as well as two other defoliates, Agents Blue and White.²³ In addition to the well-documented health hazards of Agent Orange,²⁴ the deforestation led to widespread soil erosion in the hilly areas of South Vietnam and significant loss of animal habitats as the new flora could not support the same animal life.²⁵

¹⁸ See *Still Deadly: World War II Bombs, Modern Cluster Bombs, Landmines and Small Arms*, ATL. REV., Nov. 1, 2006, available at <http://atlanticreview.org/archives/462-Still-Deadly-World-War-II-Bombs,-Modern-Cluster-Bombs,-Landmines-and-Small-Arms.html>; *World War II Bomb Clearance May Need 150 Years*, CHINA DAILY, May 4, 2005, available at http://www.chinadaily.com.cn/english/doc/2005-05/04/content_439409.htm.

¹⁹ See Dycus, *supra* note 15, at 754-55.

²⁰ See S. Res. 71, 93d Cong. 15 (1973) [hereinafter *Secret Hearings*]. This has been reprinted in *Environmental Modification Treaty: Hearings Before the Senate Comm. On Foreign Relations*, 95th Cong. 2d Sess. 101 (1978).

²¹ See WESTING, *supra* note 7 at 24.

²² *Id.* at 69-70 (discussing the damage and after-effects on indigenous flora); see also Anthony Faiola, *Vietnam's Toxic Legacy*, WASH. POST, Nov. 13, 2006, available at <http://www.msnbc.msn.com/id/15692010/?GT1=8717> (discussing the effect dioxins from Agent Orange are having on children thirty years after the war).

²³ See WESTING, *supra* note 7, at 24 (stating the United States dropped over seventy-two million liters of herbicides across South Vietnam, including Agents Orange and White that interrupt "the normal metabolism of poisoned plants" and Agent Blue that prevents a plant from retaining moisture due to its desiccating compounds).

²⁴ See Faiola, *supra* note 22.

²⁵ WESTING, *supra* note 7, at 32 (discussing how animals are affected both by their loss of habitat and by direct poisoning from the agents).

The American military used another environmentally destructive technique that involved heavy tractors with attached blades ("Rome ploughs") to mow down vegetation alongside roads in an effort to prevent ambushes.²⁶ "All told, some [325,000 hectares] were cleared by the Rome ploughs in South Vietnam, that is, 2 per cent [sic] of its entire land area."²⁷ The ecological consequences of clearing such a vast area included a loss of habitat for local animals, flooding due to less absorbent soil, erosion of soil and nutrients, and even a change in the surrounding microclimate.²⁸

Arguably, the United States Military's most secretive and controversial method of environmental warfare was seeding clouds to lengthen the rainy season. The military conducted these operations during the dry seasons from 1967 until 1972.²⁹ The operations were intended to increase the rainfall and make the primitive, unpaved roads of North Vietnam unusable, thereby slowing the enemy and its supply train.³⁰ A secondary desired effect of modifying the rainfall was to tie up North Vietnamese resources fixing flooded roads.³¹ The results of the secret project were indeterminate; the Air Force believes it increased the rain by up to 30 percent in some areas.³² However, due to a lack of available ground stations to measure the rainfall and other accurate data recording methods, the Air Force admits the "results were certainly limited and unverifiable."³³

In the midst of the politically divisive Vietnam War, the environmental movement began to take hold in the United States as an issue that united the whole country.³⁴ On January 1, 1970, President Nixon signed into law the National Environmental Policy Act ("NEPA"),³⁵ one of the first of many national environmental laws. Congress and the President followed soon after with the creation of the Environmental Protection Agency,³⁶ the Clean Air Act Amendments,³⁷ and the Clean Water Act

²⁶ See *id.* at 46-49.

²⁷ *Id.* at 47.

²⁸ *Id.* at 48.

²⁹ Secret Hearings, *supra* note 20, at 101.

³⁰ *Id.* at 102.

³¹ *Id.*

³² *Id.* at 115.

³³ *Id.* at 115, 120.

³⁴ See Richard J. Lazarus, *A Different Kind of "Republican Moment" in Environmental Law*, 87 MINN. L. REV. 999, 1001-04 (2003).

³⁵ National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (codified as amended at 42 U.S.C. §§ 4321-4370 (2000)).

³⁶ See Lazarus, *supra* note 34, at 1002.

³⁷ Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (codified as

Amendments.³⁸ The momentum of the national legislation spilled over into the international arena and the United States soon found itself negotiating numerous international treaties regarding the environment.

II. INTERNATIONAL PRINCIPLES OF WAR AND INTERNATIONAL TREATIES ON THE ENVIRONMENT

A. *The Development of the International Law of War*

Before discussing the current state of international environmental law, it is necessary to discuss how international law came about. The first attempts at developing a law of war involved bilateral treaties or the unilateral adoption of a code of warfare by a country.³⁹ Individual nations quickly discovered that these treaties were ineffective and recognized the need for truly international laws of war to regulate all countries and all wars.⁴⁰ The first major attempt to develop truly international law began in 1864 with the convening of the first Geneva Diplomatic Conference.⁴¹ This conference led to the adoption of the First Geneva Convention on the Amelioration of the Condition of the Wounded in Armies in the Field.⁴² Only four years later, the St. Petersburg Declaration renounced the "employment of arms which uselessly aggravate the sufferings of disabled men, or render their death inevitable," as well as certain types of exploding bullets.⁴³

Eventually, two separate lines of treaty law developed from these first attempts: "Hague Law" and "Geneva Law."⁴⁴ Hague Law developed its name from the two peace conferences at the Hague in 1899 and 1907 that focused on limiting the means and methods of warfare similar to the

amended at 42 U.S.C. §§ 7401-7671q (2000)).

³⁸ Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1566 (codified as amended at 33 U.S.C. §§ 1251-1387 (2000)).

³⁹ Guy B. Roberts, *The New Rules for Waging War: The Case Against Ratification of Additional Protocol I*, 26 VA. J. INT'L L. 109, 112 (1986).

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² First Geneva Convention on the Amelioration of the Condition of the Wounded in Armies in the Field, Aug. 22, 1864, 22 Stat. 940, 129 Consol. T.S. 361.

⁴³ Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, Dec. 11, 1868, 138 Consol. T.S. 297.

⁴⁴ Roberts, *supra* note 39, at 113.

St. Petersburg Declarations.⁴⁵ The most important of these treaties was the Convention Regarding Laws and Customs of War on Land (Hague IV), which regulated the means and methods of land warfare.⁴⁶ Following World War II, the world saw the need to further regulate the wartime treatment of civilians, wounded and captured soldiers, and types of warfare that are particularly damaging to surrounding civilian populations.⁴⁷ This realization led to four separate agreements collectively known as the Geneva Convention of 1949.⁴⁸ Geneva law compliments Hague law by defining who or what is a legitimate target of the means and methods of warfare allowed by Hague law.⁴⁹

B. *International Customary Law of War*

Four customary principles of the law of war developed from the early Hague Law and apply today: necessity, proportionality, discrimination, and humanity.⁵⁰ In order for a principle to become customary international law, there must be "evidence of a general practice accepted as law" and it must reflect "the general principles of law recognized by civilized nations."⁵¹ The underlying ideal behind these customary principles of the law of war is that the means of engaging in warfare are not unlimited.⁵²

⁴⁵ See First Peace Conference at the Hague, July 29, 1899, available at <http://net.lib.byu.edu/~rdh7/wwi/hague.html>; Second Peace Conference at the Hague, Oct. 1907, available at <http://net.lib.byu.edu/~rdh7/wwi/hague.html>.

⁴⁶ Convention Respecting the Laws and Customs of War on Land (Hague IV), Oct. 18, 1907, 36 Stat. 2277.

⁴⁷ See Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug. 12, 1949, 6 U.S.T. 3114, 75 U.N.T.S. 31 [hereinafter First Geneva Convention]; Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, Aug. 12, 1949, 6 U.S.T. 3217, 75 U.N.T.S. 85; Geneva Convention Relative to the Treatment of Prisoners of War, Aug. 12, 1949, 6 U.S.T. 3316, 75 U.N.T.S. 135; Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287.

⁴⁸ See *supra* note 47.

⁴⁹ Schmitt, *supra* note 6, at 65-66.

⁵⁰ Carl E. Bruch & Jay E. Austin, *The 1999 Kosovo Conflict: Unresolved Issues in Addressing the Environmental Consequences of War*, 30 Env'tl. L. Rep. (Env'tl. Law Inst.) 10,069, 10,075 (2000); Peter J. Richards & Michael N. Schmitt, *Mars Meets Mother Nature: Protecting the Environment During Armed Conflict*, 28 STETSON L. REV. 1047, 1073-86 (1999).

⁵¹ Statute of the International Court of Justice, art. 38, para. 1(b),(c), June 26, 1945, 59 Stat. 1031, 33 U.N.T.S. 993 [hereinafter ICJ Statute].

⁵² See Schmitt, *supra* note 6, at 52.

The first customary principle that actors must always satisfy is the principle of military necessity. It requires an aggressor to determine whether it will gain an articulable military advantage from attacking a target; if not, the aggressor may not attack.⁵³ The intent of this principle is to prevent long wars of arbitrary civilian attrition in an effort to win a war.⁵⁴ This principle is perhaps best summarized in *United States v. List*, one of the many post-World War II trials held at Nuremberg:

[Military necessity] does not permit the killing of innocent inhabitants for purposes of revenge or the satisfaction of a lust to kill. The destruction of property to be lawful must be imperatively demanded by the necessities of war. Destruction as an end in itself is a violation of international law. There must be some reasonable connection between the destruction of property and the overcoming of the enemy forces.⁵⁵

The conviction of the German commanders in *List* illustrates that the principle of necessity requires the aggressor to demonstrate a nexus between the military advantage sought and the target selected.⁵⁶

The second customary principle that actors must satisfy contemporaneously with necessity is proportionality.⁵⁷ Proportionality can be thought of best as a sliding scale of the military advantage gained versus the humanitarian consequences.⁵⁸ At some point on the scale, the damage to the surrounding civilian population will outweigh the military advantage gained, and the attack is deemed illegal under the principle of proportionality. The difficulty in determining this exact point, where an attack becomes illegal, is exacerbated by the differing values of human life in the international forum.⁵⁹ Compounding this cultural difference is the fact that values within a single society evolve over time.⁶⁰ For example, prior

⁵³ See Protocol I, *supra* note 8, at art. 52.

⁵⁴ See *generally id.*

⁵⁵ *United States v. List (The Hostage Case)*, reprinted in 11 TRIALS OF WAR CRIMINALS BEFORE THE NUREMBERG MILITARY TRIBUNALS 1253-54 (1950).

⁵⁶ *Id.*

⁵⁷ See Hourcle, *supra* note 9, at 668.

⁵⁸ See Richards & Schmitt, *supra* note 50, at 1082.

⁵⁹ See *infra* notes 145-51 and accompanying text (discussing the differing values of human life when paying claims under the Foreign Claims Act).

⁶⁰ See Richards & Schmitt, *supra* note 50, at 1083.

to the Vietnam War, destruction of the environment was not considered a major factor in the United States' proportionality analysis, but with the rise of the environmental movement, the world community now evaluates the environmental impact of different targets hit and the weapons used.⁶¹

The third customary principle, discrimination, requires the means of warfare to discriminate between legitimate military targets (as defined by necessity and proportionality) and illegitimate civilian targets.⁶² A recent example of attacks that likely violate the principle of discrimination were Hezbollah's rocket attacks against cities in northern Israel.⁶³ The rockets were not guided and clearly did not discriminate between legitimate military targets and illegitimate schools and hospitals. In addition to indiscriminate attacks, the world community has banned several weapons that it recognizes as incapable of discrimination, including unmarked land-mines, booby traps,⁶⁴ and biological and chemical weapons.⁶⁵

The final principle of the customary law of war, humanity, protects against inhumane means and methods of warfare.⁶⁶ At the heart of the principle of humanity is the ideal that there are certain "things that civilized people just don't do."⁶⁷ This principle complements the other three principles of discrimination, necessity and proportionality. In some

⁶¹ See generally Part IV.B (discussing the criticisms raised against the United States for the use of depleted uranium munitions, cluster bombs, and the effect of missed targets). For an ongoing discussion of the efforts to improve or ban cluster munitions, see *HRW Documents on Cluster Bombs*, HUMAN RIGHTS WATCH, available at http://www.hrw.org/doc/?t=arms_clusterbombs.

⁶² Hourcle, *supra* note 9, at 665-66.

⁶³ See MARY ELLEN O'CONNELL, THE JOAN B. KROC INST. FOR INT'L PEACE STUDIES, POLICY BRIEF NO. 12, PROPORTIONALITY AND SUSTAINABLE PEACE IN THE MIDDLE EAST 3 (2006), available at <http://kroc.nd.edu/polbriefs/documents/polbrief12.pdf> (describing the rockets as inaccurate and hitting civilian and military targets alike indiscriminately).

⁶⁴ United Nations Conference on Prohibitions or Restrictions of Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, Protocol II, Oct. 10, 1980, 19 I.L.M. 1523 [hereinafter *Conventional Weapons Prohibition*].

⁶⁵ Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Apr. 10, 1972, 26 I.L.M. 583, 1015 U.N.T.S. 163 (reaffirming the world's commitment to banning chemical and biological weapons and reducing national stockpiles); Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, 94 L.N.T.S. 65 [hereinafter *1925 Protocol Against Chemical and Biological Weapons*].

⁶⁶ See Schmitt, *supra* note 6, at 61.

⁶⁷ *Id.* at 62.

instances, illegal acts can violate all four principles, such as destroying food supplies to induce starvation and poisoning water supplies.⁶⁸ Other attacks, such as the use of incendiary devices to burn the enemy alive, are illegal solely under the principle of humanity because of the vicious effect on the enemy.⁶⁹

The customary principles of the law of war can be used to protect the environment as well as civilians. Attacks such as poisoning a town's drinking water source or laying undocumented mine fields clearly have an effect on both the environment and the civilian population. The customary principles of the law of war can thus be used to protect the environment as a byproduct of protecting the civilian population.⁷⁰

While the customary principles of warfare set about a framework for protecting the environment, the primary criticism of these principles and international law in general are their overall lack of an enforcement mechanism.⁷¹ The United States clearly recognizes the customary principles of warfare.⁷² Mere recognition of an international principle is not adequate; a foreign government wishing to bring a claim needs an international forum to hear the claim. The charter of the United Nations created the International Court of Justice ("ICJ") to hear these international disputes,⁷³ but the ICJ only has jurisdiction only if both parties to the dispute consent to the Court's jurisdiction.⁷⁴ In practice, the United States has never consented to the jurisdiction of the ICJ, which leaves complaining nations without a remedy.⁷⁵

⁶⁸ See *id.* at 61.

⁶⁹ See Conventional Weapons Prohibition, *supra* note 64, Protocol III. The United States is not a party to this protocol, but is party to Protocols I and II.

⁷⁰ William A. Wilcox, Jr., *Environmental Protection in Combat*, 17 S. ILL. U. L. J. 299, 303-04 (1993).

⁷¹ See Keith P. McManus, *Civil Liability for Wartime Environmental Damage: Adapting the United Nations Compensation Commission for the Iraq War*, 33 B.C. ENVTL. AFF. L. REV. 417, 430-32 (2006).

⁷² See, e.g., *United States v. List (The Hostage Case)*, reprinted in 11 TRIALS OF WAR CRIMINALS BEFORE THE NUREMBERG MILITARY TRIBUNALS 1253-54 (1950).

⁷³ ICJ Statute, *supra* note 51, art. 34.2; International Court of Justice, Rules of Court, art. 1 (1978), available at <http://www.icj-cij.org/documents/index.php?pl=4&p2=3&p3=0> [hereinafter Rules of Court].

⁷⁴ Rules of Court, *supra* note 73, art. 38(5) (directing that a claim cannot be brought against a nation under the ICJ unless the nation submits to the ICJ's authority).

⁷⁵ See *id.*; see also, e.g., *Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.)*, 1984 I.C.J. 392, 396-98 (Nov. 26), available at <http://www.icj-cij.org/docket/files/70/6485.pdf> (demonstrating the United States rejecting the jurisdiction of the ICJ in a claim brought by Nicaragua).

In 2002, the United Nations created a second international court, the International Criminal Court ("ICC"), to prosecute individuals instead of states for "[t]he crime of genocide; [c]rimes against humanity; [w]ar crimes; [and] [t]he crime of aggression."⁷⁶ Environmental damage can be characterized as either war crimes or crimes against humanity,⁷⁷ so the ICC could be used for environmental protection. Unfortunately, the United States is not a party to the treaty establishing the ICC, which leaves the Court lacking jurisdiction, and the claimant without a remedy.⁷⁸

C. *Additional Protocol I of the Geneva Convention*

In 1974, the International Committee of the Red Cross ("ICRC") convened the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts. The ICRC convened this conference because the nature and scale of warfare was changing and the laws of war needed to be updated in response.⁷⁹ This conference met four times between 1974 and 1977 and developed two additional protocols to the Geneva Convention.⁸⁰ Protocol I is a mixture of Hague and Geneva law and attempts to regulate international armed conflict.⁸¹ Protocol II attempts to regulate human rights during non-international conflict or civil war.⁸²

Additional Protocol I of the Geneva Convention is the first formal attempt to specifically prevent damage to the environment during war-time.⁸³ It accomplishes this through three articles: 35(3), 55, and 56. Article 55 follows traditional Hague and Geneva law because it prohibits "widespread, long-term and severe damage" to the environment because it "thereby . . . prejudice[s] the health or survival of the population."⁸⁴

⁷⁶ Rome Statute of the International Court, art. 5, *opened for signature* July 17, 1998, 2187 U.N.T.S. 90 [hereinafter Rome Statute].

⁷⁷ See *supra* notes 62-70 and accompanying text (discussing how violations of discrimination and humanity laws can be used to characterize environmental crimes as violating the customary principles of war).

⁷⁸ See Rome Statute, *supra* note 76. A full list of countries that have ratified the ICC can be found at the United Nations website, <http://untreaty.un.org/English/bible/englishinternetbible/partI/chapterXVIII/treaty11.asp>. The United States is not on the list.

⁷⁹ See Schmitt, *supra* note 6, at 68-69.

⁸⁰ *Id.*

⁸¹ *Id.* at 69.

⁸² See Protocol II, *supra* note 8.

⁸³ See Protocol I, *supra* note 8, arts. 35(3), 55, 56.

⁸⁴ *Id.* at art. 55.

Article 55 focuses on protecting the environment because of its effect on the surrounding population. Article 35(3), on the other hand, prohibits the "methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment."⁸⁵ Article 35(3) is unique because it protects the environment in its own right, regardless of its effect on the surrounding population. Finally, article 56 protects the environment by prohibiting attacks on "[w]orks or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations" to prevent releasing the forces and "consequent severe losses among the civilian population."⁸⁶ The environmental implications of attacks on these targets are clear and would likely lead to violations of articles 35(3) and 55 as well because it would intentionally cause "widespread, long-term and severe damage" to the natural environment.⁸⁷

Although Additional Protocol I provides protection to the environment during wartime, it does not clearly define the level of protection, and the application of the treaty to the United States seems doubtful. The terms "widespread, long-term and severe" are never defined in the treaty, so the time frame and scale of damage necessary to violate the treaty are open to debate.⁸⁸ Despite the definition problems, the United States signed Additional Protocol I in 1978,⁸⁹ but the Senate never ratified it, so the United States is not party to the agreement.⁹⁰ Even though the United States did not ratify the treaty, the United States armed forces have cited Additional Protocol I as customary law of war.⁹¹ Although this recognition appears to strengthen environmental protection, the military clearly de-

⁸⁵ *Id.* art. 35(3).

⁸⁶ *Id.* art. 56.

⁸⁷ *Id.* arts. 35(3), 55.

⁸⁸ *Id.*

⁸⁹ See Letter of Transmittal from President Ronald Reagan to the U.S. Senate, Protocol II Additional to the 1949 Geneva Conventions and Relating to the Protection of Victims of Non-international Conflicts, S. Treaty Doc. No. 2, 100th Cong., 1st Sess., reprinted in *Agora: The U.S. Decision Not to Ratify Protocol I to the Geneva Conventions on the Protection of War Victims*, 81 AM. J. INT'L. L. 910, 916 (1987).

⁹⁰ See Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977: State Parties, <http://www.icrc.org/ihl.nsf/WebSign?ReadForm&id=470&ps=P> (last visited Jan. 10, 2008).

⁹¹ UNITED STATES ARMY, OPERATIONAL LAW HANDBOOK 11 (2002) ("Furthermore, the U.S. considers many of the provisions of the Protocols to be applicable as customary international law.") [hereinafter OPERATIONAL LAW HANDBOOK (2002)].

lineates that the United States takes exception to articles 35(3), 55, and 56.⁹² Ultimately, an attempt to protect the environment through the enforcement against the United States of Additional Protocol I appears doubtful at best.

D. Environmental Modification Treaty

The only treaty to which the United States is a party that directly pertains to the environment in wartime is the Environmental Modification Treaty ("ENMOD").⁹³ The need for a treaty preventing the use of the environment as a weapon was first proposed by the United States Senate in the early 1970s.⁹⁴ This proposal was in response to top secret hearings where the military admitted to using cloud seeding as an environmental weapon against the North Vietnamese.⁹⁵ The Soviet Union quickly agreed to the need to limit this method of warfare, and after two years of negotiation the United Nations General Assembly adopted the resolution in 1976.⁹⁶

Unfortunately, the ENMOD treaty by its terms does not directly provide significant environmental protection in wartime.⁹⁷ It specifically bans the use or modification of the environment as a weapon rather than explicitly prohibiting environmental damage.⁹⁸ Article I provides "(1) Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party."⁹⁹ The key terms "widespread," "long-lasting" and "severe" are further defined in the Understanding related to Article I: "(a) 'widespread': encompassing an area on the scale of several hundred square kilometers; (b) 'long-lasting': lasting for a period of months, or approximately a season; (c) 'severe': involving serious or significant disruption or harm to human life, natural and economic resources or other

⁹² *Id.*

⁹³ Although the Hague Law principles of proportionality and necessity deal indirectly with the environment, *see supra* notes 53-61, ENMOD is the only treaty ratified by the United States that specifically mentions the environment.

⁹⁴ *See Secret Hearings, supra* note 20, at 15.

⁹⁵ *Id.* at 21.

⁹⁶ *Id.* at 2-5.

⁹⁷ *See generally* ENMOD Treaty, *supra* note 8.

⁹⁸ *See generally id.*

⁹⁹ *Id.* at 336.

assets.”¹⁰⁰ Examples of prohibited environmental modification techniques include, but are not limited to, “earthquakes; tsunamis; an upset in the ecological balance of a region; changes in weather patterns . . . changes in climate patterns; changes in ocean currents; changes in the state of the ozone layer; and changes in the state of the ionosphere.”¹⁰¹

One key change from Additional Protocol I, which was negotiated contemporaneously with the ENMOD treaty, was the use of “or” rather than “and” in the description of “widespread, long-lasting, or severe.”¹⁰² This change shows the lower threshold needed to prove an environmental modification violation of international law compared to an environmental damage violation under Protocol I.

From the outset, the ENMOD treaty received sharp criticism from major environmental groups in the United States.¹⁰³ Environmental groups believed the treaty was “illusory,” with the primary substantive criticisms as follows:

[A] sound Convention would prohibit all hostile environmental modification techniques and activities, and such a prohibition ought to apply with respect to any and all uses, and the prohibition should not apply merely to use against a party to the Convention. We also think that the Convention ought to contain a verifiable prohibition on the development and testing of environmental modification techniques for hostile purposes.¹⁰⁴

An additional concern was that the enforcement was left to the Security Council and subject to the “crippling limitation” of a veto.¹⁰⁵ Hence, any permanent member of the Security Council could still use environmental modification weapons and there would be no recourse if they chose to use their veto. A final concern was that the treaty does not even prohibit the

¹⁰⁰ Secret Hearings, *supra* note 20, at 11-12.

¹⁰¹ *Id.* at 12.

¹⁰² ENMOD, *supra* note 8, art. I; Protocol I, *supra* note 8, art. 55.

¹⁰³ See Secret Hearings, *supra* note 20, at 36-46 (statement of Leonard C. Meeker, Director of International Projects Center For Law and Social Policy, Washington, D.C., presenting on behalf of the Natural Resources Defense Council, the Sierra Club, the Environmental Policy Center, the Wilderness Society and the Federation of American Scientists).

¹⁰⁴ *Id.* at 39.

¹⁰⁵ *Id.*

defoliation and weather modification tactics from the Vietnam War because they do not qualify as widespread, long-lasting, or severe.¹⁰⁶

Much of the criticism was addressed in the Senate Resolution discussing the ratification of the treaty. First, the chairman made it clear that after seven years of negotiation, this is the best compromise that can be made between environmental protection and the military.¹⁰⁷ If the treaty were inclusive of all hostile environmental modification techniques, many necessary military functions could bring about litigation. Examples include an artillery bombardment that triggers a landslide or an avalanche,¹⁰⁸ dispelling fog to enable aerial resupply,¹⁰⁹ and defoliating around a base to provide for defensive lines-of-fire and observation.¹¹⁰ Additionally, the United States did not want to ban all research on environmental modification techniques because there were several promising programs that had great potential for peaceful purposes.¹¹¹ Finally, defoliation is arguably covered if it has widespread effects, as the foliage is part of the environment.¹¹²

E. Other International Treaties Limiting Warfare

The United States is party to several other international treaties banning the use of specific weapons during wartime. Chemical and biological weapons were banned in 1925,¹¹³ but the United States reserved a right to respond in kind with chemical weapons.¹¹⁴ The other major treaty signed by the United States was a prohibition against certain weapons that are excessively injurious against civilians.¹¹⁵ The United States Senate ratified Protocols I and II of this treaty, which prohibit fragmentation weapons that cannot be detected by X-rays and limits the indiscriminate use of land-mines that do not self-destruct.¹¹⁶ The United States did not

¹⁰⁶ *Id.* at 38.

¹⁰⁷ *Id.* at 44.

¹⁰⁸ *Id.* at 32.

¹⁰⁹ *Id.* at 31.

¹¹⁰ UNITED STATES ARMY, OPERATIONAL LAW HANDBOOK 194.

¹¹¹ See Secret Hearings, *supra* note 20, at 31 (describing programs that included “precipitation enhancement” in dry areas and a program “trying to reduce the wind speed in the eye of hurricanes”).

¹¹² See *id.* at 44.

¹¹³ See generally 1925 Protocol Against Chemical and Biological Weapons, *supra* note 65.

¹¹⁴ OPERATIONAL LAW HANDBOOK, *supra* note 91, at 15.

¹¹⁵ See generally Conventional Weapons Prohibition, *supra* note 64.

¹¹⁶ OPERATIONAL LAW HANDBOOK, *supra* note 110, at 16.

ratify Protocols III and IV, which prohibit the use of incendiary weapons and blinding lasers, respectively.¹¹⁷

F. The Limitations of International Law in Protecting the Environment During Wartime

Ultimately, if a country is looking for environmental protection during wartime, international law has many shortcomings.¹¹⁸ The customary law of war provides a framework for arguing whether individual actions or weapons violate the principle of necessity, proportionality, humanity, or discrimination, but there is no international court with jurisdiction to hear these claims against the United States.¹¹⁹ The Environmental Modification Treaty merely prevents the use of the environment as a means of war and does not accomplish the stated goal of protecting the environment during wartime.¹²⁰ Finally, Additional Protocol I to the Geneva Convention provides a limited means of protecting against "long-term, widespread, and severe" damage, but the United States is not a party to the treaty and expresses direct reservations about the indefiniteness of these very terms.¹²¹

Although these limitations of international law create difficulties for a country to make a claim against the United States, should the United States itself be concerned about environmental damage during wartime? In the aftermath of the Iraq War, the United States faced a massive rebuilding process in part because of the environmental damage inflicted during the war.¹²² As of the end of February 2007, the Department of Defense had disbursed over \$10.6 billion to the Iraq Reconstruction and Redevelopment Fund.¹²³ Additionally, the United Nations raised over

¹¹⁷ *Id.*

¹¹⁸ See *supra* Parts II.A-II.D.

¹¹⁹ See *supra* Part II.B.

¹²⁰ See *supra* Part II.D.

¹²¹ See OPERATIONAL LAW HANDBOOK, *supra* note 91, at 11.

¹²² See U.N. ENV'T PROGRAMME, ASSESSMENT OF ENVIRONMENTAL "HOT SPOTS" IN IRAQ (2005), available at http://siteresources.worldbank.org/IRFFI/64168382-1092419001661/20891321/SpecialReport-UNEPIraq_ESA.pdf (presenting a detailed assessment of five environmental "hot spots" after the war); Solana Pyne, *Leaving a Mess in Mesopotamia*, THE VILL. VOICE, Apr. 2003, available at <http://www.villagevoice.com/news/0316.pyne,43403,1.html>.

¹²³ DEPT OF THE ARMY, IRAQ RECONSTRUCTION REPORT 3 (2007) [hereinafter IRAQ RECONSTRUCTION REPORT], available at <http://www.grd.usace.army.mil/news/releases/20070227.pdf>.

\$1.2 billion from numerous countries including the United States to help reconstruct Iraq.¹²⁴ The Iraqi government and supporting organizations are using the funds for a wide range of environmentally-related projects including rebuilding of the electric grid and health, water and sewage programs.¹²⁵ While none of these projects are explicitly tied to wartime environmental damage,¹²⁶ minimizing the environmental damage is intuitively in the economic interest of the United States so as to minimize the burden on United States taxpayers.

In addition to the \$11.8 billion spent by the United States and various nations in the reconstruction of Iraq, some commentators argue that the wartime damage to the electric power grid contributes to the \$400 billion cost of security in Iraq.¹²⁷

In the most recent survey . . . Iraqis were asked which of 10 different problems 'requiring a political or governmental solution' was most important to them. The first choice, by a margin of about 10 percent, was 'inadequate electricity.' 'National security' came in fifth; the 'presence of multinational forces' was seventh; and 'terrorists' was eighth.

A popular if not universal idea is that a more robust electrical system would be a weapon against the insurgency . . .¹²⁸

Fixing the electrical power system will not cure all of Iraq's security problems, but the survey demonstrates that it could go a long way to helping build confidence in the fledgling government and improve security.¹²⁹

If the United States did want to create national legislation to protect the environment of hostile countries during wartime, the Foreign Claims Act provides a foundational model. The Foreign Claims Act provides

¹²⁴ U.N. DEV. GROUP, IRAQ TRUST FUND GROSS DONOR COMMITMENTS AND DEPOSITS, available at <http://www.irffi.org/WBSITE/EXTERNAL/IRFFI/0,,contentMDK:20316791~pagePK:64168627~piPK:64167475~theSitePK:491458,00.html> (stating that the United States contribution is \$5 million of the total \$1.26 billion).

¹²⁵ IRAQ RECONSTRUCTION REPORT, *supra* note 123, at 3.

¹²⁶ *See id.*

¹²⁷ *See, e.g.,* Martin Wolk, *Cost of Iraq War Could Surpass \$1 Trillion*, MSNBC.COM, Mar. 17, 2006, <http://www.msnbc.msn.com/id/11880954>.

¹²⁸ Glenn Zorpette, *Re-engineering Iraq*, IEEE SPECTRUM, Feb. 2006, available at <http://www.spectrum.ieee.org/feb06/2831>.

¹²⁹ *See id.*

compensation for accidental damage to non-hostile foreign citizens paid by the United States Military.¹³⁰ This Act forces the military to internalize these accidental costs and recognize the price of its peaceful mistakes. Extending this principle to environmental damage, the United States Military could better measure the total cost of striking a target¹³¹ and the true price of weapons' damage, including the environmental impact.¹³²

III. NATIONAL LEGISLATION PROTECTING FOREIGN CLAIMANTS—THE FOREIGN CLAIMS ACT

Congress established the Foreign Claims Act in 1942 "for the purpose of promoting and maintaining friendly relations by the prompt settlement of meritorious claims"¹³³ for property loss or personal injury of foreign nationals. Only non-combat incidences of the United States Armed Forces fall within the scope of this Act. If the United States is engaged in conflict within a country, the claimant must be "friendly to the United States"¹³⁴ and the action must not "result directly or indirectly from an act of the armed forces of the United States in combat."¹³⁵ There is an exception to the combat exclusion if an aircraft has an accident or malfunction en route to or returning from a combat mission.¹³⁶ Additionally, the Secretary of Defense can waive the entire non-combat exclusion of payments as was done after the 1983 invasion of Granada.¹³⁷

The Foreign Claims Act is quite expansive and covers damages by civilian employees of the Department of Defense in addition to the military.¹³⁸ The Act is limited to actions under the Department of Defense as evidenced by the Comptroller General's refusal to expand the Foreign

¹³⁰ Foreign Claims Act, 10 U.S.C. § 2734 (West Supp. 2007).

¹³¹ See *infra* Part IV.B.1 (discussing the after-effects of bombing Pancevo industrial complex).

¹³² See *infra* Parts IV.B.2, IV.B.3 (discussing the effects of cluster munitions and depleted uranium).

¹³³ Foreign Claims Act, ch. 645, 55 Stat. 880 (1942) (current version at 10 U.S.C. § 2734(a) (West Supp. 2007)).

¹³⁴ 10 U.S.C. § 2734(b)(2) (2000).

¹³⁵ *Id.* § 2734(b)(3).

¹³⁶ *Id.*

¹³⁷ See Lee Hockstader, *In Panama, Civilian Deaths Remain an Issue; Months After Invasion, Some Still Seek Compensation for Loved Ones Lost to U.S. Fire*, WASH. POST, Oct. 6, 1990, at A23.

¹³⁸ See 10 U.S.C. § 2734(h) (2000).

Claims Act to injuries created by the United States Agency for International Development during times of war.¹³⁹ Additionally, Congress placed several limitations on the Foreign Claims Act, including a requirement that no payments are made unless “the amount tendered is accepted by the claimant in full satisfaction.”¹⁴⁰ Other requirements include a two-year statute of limitations on all claims,¹⁴¹ and the military’s maximum discretionary award is \$100,000.¹⁴²

Perhaps the most interesting aspect of the Foreign Claims Act is that it is completely discretionary and not subject to judicial review.¹⁴³ Additionally, if a claim exceeds the \$100,000 maximum allowed under the Foreign Claims Act, the service secretary can pay up to \$100,000 and forward a request for the remainder to the Secretary of Treasury for payment subject to his or her certification.¹⁴⁴ In theory, this interplay of statutes allows the appropriate service secretary and the Treasury Secretary to pay a foreign claimant any amount of money at their joint discretion without being subject to judicial review.

In practice, the Foreign Claims Act creates a host of challenging legal, gender, and ethnic issues.¹⁴⁵ The primary legal issue is determining whether damages can be assessed under the Foreign Claims Act in the country where the accident occurred. If the United States has a Status of Forces Agreement with the country, such as countries in the North American Treaty Organization (“NATO”), the international agreement applies instead of the Foreign Claims Act.¹⁴⁶ If no international agreement is in place, the military must apply local tort law and custom in determining the appropriate value of damages.¹⁴⁷

¹³⁹ See Claim of Hai Tha Truong, 64 Comp. Gen. 155 (1984).

¹⁴⁰ 10 U.S.C. § 2734(e) (2000).

¹⁴¹ *Id.* § 2734(b).

¹⁴² *Id.* § 2734(d).

¹⁴³ See 10 U.S.C. § 2734 (West. Supp. 2007); *Aaskov v. Aldridge*, 695 F. Supp. 595, 599 (D.C. Cir. 1988) (holding that the Secretary of the Air Force has the discretion to decide whether not to settle a claim and cannot be ordered by a court to make a settlement).

¹⁴⁴ 10 U.S.C. § 2734(d); 31 U.S.C. § 1304 (2000).

¹⁴⁵ See Vanessa Blum, *After the War, A Time to Pay: How JAG Lawyers Settle Foreign Claims Over Noncombat Damage*, LEGAL TIMES, April 1, 2003, at 1.

¹⁴⁶ See, e.g., *Aaskov*, 695 F. Supp. at 596 (holding that a Danish citizen does not have a claim under the Federal Claims Act, but rather under NATO Status of Forces Agreement and the International Claims Act, 10 U.S.C. §§ 2734a, 2734b (2000)).

¹⁴⁷ R. Peter Masterton, *Managing a Claims Office*, 2005 ARMY LAW. 29, 48 (2005); see also Blum, *supra* note 145, at 16.

Applying local law raises numerous difficult issues. For example, in Somalia, a "man's life was valued at 100 camels and a woman's life at [only] 50 [sic] camels."¹⁴⁸ The military determined camels cost approximately \$100 during stable economic times and placed a maximum \$10,000 payout for death claims in Somalia.¹⁴⁹ Likewise, in Afghanistan, the military used a valuation for a person's life similar to that used in United States tort law, accounting for a person's age, future earnings, and dependents. Applying this formula leads to payments of less than \$15,000 for the wrongful death of an Afghan.¹⁵⁰ Larger racial and ethical issues begin to emerge in the application of the Foreign Claims Act when one compares the meager payments for the loss of life in Somalia and Afghanistan with the payment of \$1,000,000 to an Australian woman for brain damage incurred when hit by a golf ball.¹⁵¹

IV. PROPOSAL TO EXTEND NATIONAL LEGISLATION TO PROTECT THE ENVIRONMENT

A. *Extending the Foreign Claims Act*

Although the Foreign Claims Act is far from perfect,¹⁵² it does provide an otherwise unavailable means for foreign claimants to seek redress for accidental military harms, and for military commanders to track non-combat damages. Unfortunately, the Foreign Claims Act does not presently provide a means to compensate for the environmental externalities of warfare previously identified.¹⁵³ The Secretary of Defense can simply waive the non-combat requirement,¹⁵⁴ but creating a series of one-time exceptions would not force the military to internalize the future costs of environmental damage into its planning.

If the United States Congress would require the military to plan for environmental damage before the war, rather than paying for it after

¹⁴⁸ Blum, *supra* note 145, at 18.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² See Laura N. Pennelle, Comment, *The Guantanamo Gap: Can Foreign Nationals Obtain Redress for Prolonged Arbitrary Detention and Torture Suffered Outside the United States?*, 36 CAL. W. INT'L L. J. 303, 339-41 (2005) (discussing the many perceived problems of obtaining relief under the Foreign Claims Act in Iraq).

¹⁵³ See *supra* Part II.F.

¹⁵⁴ See Hockstader, *supra* note 137, at A23.

the war,¹⁵⁵ the Foreign Claims Act provides an excellent model for the military. The legislation could be easily expanded by complementing the exception to the exclusion for aircraft accidents or malfunctions¹⁵⁶ with an exception for environmental damage. Congress should restrict this to environmental damage lasting more than one year¹⁵⁷ and having a direct impact on human health. This proposed modification would limit compensation to only the most extreme cases where environmental damage cannot be corrected within a year, while not creating unrealistic liability for every crater on the battlefield. Additionally, payments for environmental damage would still be at the Department of Defense's discretion to account for scenarios where the United States does not have unquestioned air superiority or the ability to select targets and account for the environment.¹⁵⁸

Moreover, expanding the Foreign Claims Act to compensate for long-term environmental damage would help to achieve the ultimate stated goal of the Foreign Claims Act: "[t]o promote and to maintain friendly relations" with other countries.¹⁵⁹ Other countries level three primary environmental criticisms against the United States: the destruction of environmentally sensitive targets, the high dud rate of cluster bombs, and the use of depleted uranium.¹⁶⁰ Changing the Foreign Claims Act would address these concerns and provide further benefits.

B. *Environmental Criticisms*

1. Selection of Targets: The Bombing of Pancevo

From March 24, 1999, through June 8, 1999, NATO forces hit the Pancevo Industrial Complex in Serbia with missiles and bombs.¹⁶¹ These strikes released numerous toxic chemicals into the environment, including 2,100 tons of Ethylene Dichloride ("EDC"), eight tons of metallic mercury,

¹⁵⁵ See IRAQ RECONSTRUCTION REPORT, *supra* note 123, at 3.

¹⁵⁶ See 10 U.S.C. § 2734(b)(3) (2000).

¹⁵⁷ See generally *infra* Part IV.B.1 (arguing that the one-year minimum allows adequate time to perform an environmental assessment and begin a cleanup operation).

¹⁵⁸ See generally Faiola, *supra* note 22 (discussing how paying for the cleanup of just the three largest "hot-spots" in Vietnam would cost over \$60 million and ultimately it would likely be cost prohibitive to clean the entire country).

¹⁵⁹ 10 U.S.C. § 2734(a) (West. Supp. 2007); Faiola, *supra* note 22.

¹⁶⁰ See Haavisto, *supra* note 10, at 573-83.

¹⁶¹ Uli Schmetzer, *Serbs Allege NATO Raids Caused Toxic Catastrophe: Bombed Refineries, Plants Spewed Stew of Poisons, They Say*, CHIC. TRIB., July 8, 1999, at N1.

460 tons of vinyl chloride monomer ("VCM"), 80,000 tons of oil and oil products and 250 tons of liquid ammonia.¹⁶² The EDC, mercury, VCM, and oil products threatened terrestrial and aquatic life, the health of the food chain, and plant life in direct contact with the chemicals.¹⁶³ The Pancevo site managers "released [the ammonia] into the open canal from the fertiliser [sic] plant . . . fearful [that] a direct air strike on stored ammonia could kill large numbers of people."¹⁶⁴ Recording stations in Pancevo reported concentrations of VCM "10,600 times more than safe industrial levels,"¹⁶⁵ and the mayor reported seeing black clouds of toxins in the sky and white clouds of mixed poisons floating through the streets.¹⁶⁶

Despite being spared from the worst of the environmental effects because the predominately westerly winds carried the toxins away from the city, the citizens of Pancevo still suffered devastating effects.¹⁶⁷ At least one doctor reportedly advised all of his pregnant patients to have abortions because of the potential effects of the toxins.¹⁶⁸ Fish in the neighboring Danube river appeared "sluggish and sickly, with protruding bones and bulging eyes."¹⁶⁹ Local residents regularly complained of "respiratory difficulties, burning eyes, choking sensations and upset stomachs."¹⁷⁰

Luckily for the citizens of Pancevo and the former Yugoslavia as a whole, the United Nations Environment Programme ("UNEP") moved in quickly after the war in an effort to identify environmental damage, clean up "hot spots," and provide clean drinking water to affected areas.¹⁷¹ In total, the cleanup efforts by UNEP in the Balkans cost over \$12.5 million and took four years to complete.¹⁷² UNEP is not allocated this money through general United Nations funds but rather must raise this money

¹⁶² U.N. ENV'T PROGRAMME & U.N. CTR. FOR HUMAN SETTLEMENTS, *THE KOSOVO CONFLICT: CONSEQUENCES FOR THE ENVIRONMENT & HUMAN SETTLEMENTS* 34 (1999), available at <http://postconflict.unep.ch/publications/finalreport.pdf>.

¹⁶³ *Id.* at 34-35.

¹⁶⁴ *Id.* at 35.

¹⁶⁵ William Booth, *A Ghost City of Mixed Poisons; NATO Bombs Left Site of Petrochemical Complex a Toxic Slough*, WASH. POST, July 21, 1999, at A15.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ See Schmetzer, *supra* note 161.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ U.N. ENV'T PROGRAMME, *FROM CONFLICT TO SUSTAINABLE DEVELOPMENT: ASSESSMENT AND CLEAN-UP IN SERBIA AND MONTENEGRO* 6 (2004) [hereinafter UNEP SERBIA CLEAN-UP], available at <http://postconflict.unep.ch/publications/sam.pdf>.

¹⁷² Press Release, U.N. Env't Programme, *Conflict Hot Spots Cleaned Up* (May 7, 2004), available at <http://postconflict.unep.ch/press.php?prog=serbia#ser1>.

through a mixture of governmental and private donors.¹⁷³ Noticeably absent from the list of governmental donors are NATO's two largest members, the United States and the United Kingdom.¹⁷⁴

UNEP focused the majority of its donor funds on cleaning up Pancevo, the most heavily affected area.¹⁷⁵ Although the effort did lead to significant environmental improvements and identification of future projects, it lacked sufficient funds to remove all identified environmental toxins from Pancevo's environment.¹⁷⁶ This was due to a combination of wartime damage and preexisting environmental problems from inadequate waste treatment and environmental monitoring.¹⁷⁷ One major environmental project remaining is dredging a heavily polluted waste water canal filled with toxic levels of both mercury and mineral oils.¹⁷⁸ Ultimately, UNEP turned the remaining cleanup efforts over to the Serbian Government with safe drinking water, rehabilitated waste water treatment facilities, and a plan for future environmental cleanup.¹⁷⁹

Applying the proposed modifications to the Foreign Claims Act, the Pancevo attack clearly created environmental damage lasting more than one year with a direct impact on human health.¹⁸⁰ If the United States truly desired "[t]o promote and to maintain friendly relations"¹⁸¹ with other countries, it is certainly counterintuitive to lead NATO air strikes¹⁸² on Pancevo and to refuse to contribute with other NATO countries in the later environmental cleanup.¹⁸³ By maintaining its refusal to fund environmental cleanup efforts, the United States is, in effect, taxing other environmentally minded countries without taking this into consideration during its target selection.¹⁸⁴

¹⁷³ See UNEP SERBIA CLEAN-UP, *supra* note 171, at 10.

¹⁷⁴ See *id.* at 10.

¹⁷⁵ *Id.* at 32.

¹⁷⁶ See *id.* at 32-37.

¹⁷⁷ See *id.*

¹⁷⁸ *Id.* at 36-37 (discussing that the pollution resulted from both preexisting sources and from the Kosovo conflict).

¹⁷⁹ See *id.* at 33, 50.

¹⁸⁰ See *id.* at 32-37 (discussing the cleanup and the existence of toxic substances five years after the attack).

¹⁸¹ Foreign Claims Act, 10 U.S.C. § 2734(a) (West Supp. 2007).

¹⁸² See generally *Nato Leadership Splits Revealed*, BBC NEWS ONLINE, Mar. 9, 2000, <http://news.bbc.co.uk/d/hi/europe/671420.stm> (stating that the NATO air strikes were lead by General Mike Short, United States Air Force, and that General Wesley Clark, United States Army, was the Supreme Allied Commander).

¹⁸³ See UNEP SERBIA CLEAN-UP, *supra* note 171, at 10.

¹⁸⁴ See generally Press Release, U.N. Env't Programme, Toxic Sites in Iraq to be Made

The proposed legislation could potentially create beneficial effects both preemptively and retroactively in the Pancevo example. The Department of Defense does not have an unlimited budget,¹⁸⁵ so the military must weigh the estimated cost of the cleanup if the site were bombed against other options: doing nothing, destroying the roads accessing the facility, capturing the facility, or another alternative. If the military chose not to bomb the facility because of the estimated environmental costs,¹⁸⁶ the United States benefits by averting the negative publicity of Pancevo.¹⁸⁷ Alternatively, if the United States decides the ultimate gains in bombing Pancevo outweigh the potential costs, the military will have a ready report justifying its decisionmaking, and the United States will not receive the negative publicity of letting other countries pay for its environmental decisions.¹⁸⁸

2. Use of Cluster Bombs

The United States Military employs several types of combined effect munitions ("CEM") depending on the range of the target.¹⁸⁹ The three primary weapons for dispensing CEMs are the Tomahawk Land-Attack Missile for long-range attacks launched from ships or submarines,¹⁹⁰ the Joint Standoff Weapon for medium-range attacks, and the Cluster Bomb Unit ("CBU-87") for direct attacks.¹⁹¹ Each CEM is filled with 150 to 200 "soda-can sized bomblet submunitions"¹⁹² known as cluster bombs.¹⁹³

Safe (Nov. 10, 2005), available at <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=457&ArticleID=5023&l=en> (describing how Japan is funding UNEP cleanup efforts in Iraq).

¹⁸⁵ See U.S. DEPT OF DEF., DEPARTMENT OF DEFENSE BUDGET FOR FISCAL YEAR 2008, FINANCIAL SUMMARY TABLES (2007), available at http://www.dod.mil/comptroller/defbudget/fy2008/fy2008_summary_tables_whole.pdf.

¹⁸⁶ See Booth, *supra* note 165, at A15 ("The complex was built in consultation with engineers from the United States and Europe, and Mikovic said NATO airstrike planners should have known what was in the storage tanks.").

¹⁸⁷ See generally Schmetzer, *supra* note 161.

¹⁸⁸ See UNEP SERBIA CLEAN-UP, *supra* note 171, at 10; Joan M. Mitric, *Who's Going to Clean Up Serbia?: The Environment as Prisoner of War*, WASH. POST, July 9, 2000, at B1.

¹⁸⁹ See U.S. DEPT OF DEF., REPORT TO CONGRESS: KOSOVO/OPERATION ALLIED FORCE AFTER-ACTION REPORT 90 (2000) [hereinafter AFTER-ACTION REPORT], available at <http://www.dod.mil/pubs/kaar02072000.pdf>.

¹⁹⁰ *Id.* at 92.

¹⁹¹ *Id.* at 90, 141.

¹⁹² *Id.* at 90.

¹⁹³ *Id.*

These bomblet submunitions are further filled with hundreds of pieces of shrapnel that can cause injury at up to 150 meters.¹⁹⁴ The entire CEM has an effective range of approximately 200 to 400 meters,¹⁹⁵ and is effective against a wide range of targets including enemy radar, personnel, and tanks.¹⁹⁶

The primary danger and criticism of the cluster bomb is that it has a 5 to 7percent dud rate,¹⁹⁷ which leaves 10 to 14 unexploded bomblets with each use.¹⁹⁸ When this seemingly small failure rate is multiplied by the 1,100 CBU-87s used during Operation Allied Force in Kosovo¹⁹⁹ and the 1,210 CBU-87s used in Afghanistan,²⁰⁰ the magnitude of the problem becomes apparent, with an estimated 11,000 unexploded ordnance in Kosovo and 12,000 in Afghanistan.²⁰¹

One factor amplifying the danger of the unexploded ordnance is that the CBU-87 is not a precision-guided weapon. A CBU-87 can strike over a kilometer away from its intended target.²⁰² Additionally, the submunitions have a tendency to burrow into the ground when they land on soft soil.²⁰³ This causes the submunitions to become invisible to the naked

¹⁹⁴ Virgil Wiebe, *Footprints of Death: Cluster Bombs as Indiscriminate Weapons Under International Humanitarian Law*, 22 MICH. J. INT'L L. 85, 89 (2000).

¹⁹⁵ Federation of American Scientists: Military Analysis Network, CBU-87, <http://www.fas.org/man/dod-101/sys/dumb/cbu-87.htm> (last visited Jan. 10, 2008).

¹⁹⁶ AFTER-ACTION REPORT, *supra* note 189, at 90.

¹⁹⁷ See Federation of American Scientists, *supra* note 195 (noting that the manufactured claimed dud rate is 5 percent); HUMAN RIGHTS WATCH, CLUSTER BOMBS IN AFGHANISTAN 1 (2001) [hereinafter CLUSTER BOMBS IN AFGHANISTAN], available at <http://www.hrw.org/background/arms/cluster-bck1031.pdf> (reporting that the United Nations Mine Action Coordination Center found that the actual dud rate in Yugoslavia was 7 percent for the CBU-87).

¹⁹⁸ See AFTER-ACTION REPORT, *supra* note 189, at 90 (basing this number off the calculation of 202 submunitions within each CBU-87 multiplied by 5% and 7% respectively).

¹⁹⁹ CLUSTER BOMBS IN AFGHANISTAN, *supra* note 197, at 4 (accounting only for the number of cluster bombs dropped by the United States, and not the 665 cluster bombs dropped by other nations with even higher dud rates).

²⁰⁰ Thomas M. McDonnell, *Cluster Bombs Over Kosovo: A Violation of International Law?*, 44 ARIZ. L. REV. 31, 54 (2002) (noting that these numbers are only as of January 2002).

²⁰¹ These numbers are based on multiplying the number of CBU-87s dropped by the number of bomblets in each CBU by the dud rate of the CBUs.

²⁰² See HUMAN RIGHTS WATCH, FATALLY FLAWED: CLUSTER BOMBS AND THEIR USE BY THE UNITED STATES IN AFGHANISTAN 23 (2002) [hereinafter FATALLY FLAWED], available at <http://hrw.org/reports/2002/us-afghanistan/Afghan1202.pdf> (discussing an attack intended for Firqa that fell 1.3 kilometers away in the village of Qala Shater).

²⁰³ See CLUSTER BOMBS IN AFGHANISTAN, *supra* note 197, at 5 (noting that the U.N. Mine Action Coordination Center found some cluster bombs buried as deep as fifty centimeters).

eye, thereby creating thousands of virtual land mines that are unmarked with an unknown location because of the inaccuracy of the weapon.²⁰⁴ These virtual land mines are even more sensitive than actual land mines and can be set off by a variety of factors including temperature variations, extreme cold or heat, slight vibrations, or the use of a radio nearby.²⁰⁵ The military confirms the danger of the unexploded ordnance in Brigadier General John Craddock's statement, "[In terms of unexploded ordnance, a cluster bomb submunition] is probably the biggest danger in that it is so fragile . . . I don't know that the residents are aware of how dangerous it is to even walk by that. [Walking by] could set it off."²⁰⁶

Another danger associated with cluster bombs is their disproportionate killing of children.²⁰⁷ Cluster bombs are bright yellow, the size of a soda can, and have a parachute on top which makes them appealing for young children to pick up.²⁰⁸ The bright yellow color of the cluster bomb is also the same color as the food packets distributed by the United States.²⁰⁹ General Myers commented on the unfortunate similarity of colors in food aid packages and cluster bombs:

[I]t is unfortunate that the cluster bombs, the unexploded ones are the same color as the food packets. We have dropped fliers that show the pictures and the proper language explaining why you want to go to one and you don't want to go to the other. We hope that helps. Another thing we're doing is with the food packets is changing the color

²⁰⁴ See McDonnell, *supra* note 200, at 56 (discussing how cluster bomb duds act as land-mines). See generally *FATALLY FLAWED*, *supra* note 202 (stating that cluster bombs can fall significantly off target).

²⁰⁵ *Cluster Bombs the Legacy to Afghan Population*, MEDECINS SANS FRONTIERES, Jan. 18, 2002, available at <http://www.reliefweb.int/rw/rwb.nsf/AllDocsByUNID/9F2C42AA435104B3C1256B45005500FA>.

²⁰⁶ See McDonnell, *supra* note 200, at 55 (quoting Paul Beaver, *Unexploded Ordnance Proves a Problem in Kosovo*, 3 JANE'S MISSILES & ROCKETS, Aug. 1, 1999, § 8).

²⁰⁷ See Press Release, World Health Org., WHO Finds Heavy Toll from Land Mines in Kosovo (July 15, 1999) [hereinafter *Heavy Toll*], available at <http://www.who.int/inf-pr-1999/en/pr99-39.html> (noting that 71 percent of the victims of unexploded cluster bombs were under the age of 24).

²⁰⁸ See *Afghan Children at Risk From 24,000 Unexploded Bomblets*, AGENCE FRANCE PRESSE, Dec. 21, 2001, available at <http://www.reliefweb.int/rw/rwb.nsf/AllDocsByUNID/C83417001BC835DBC1256B29004C5CAE>.

²⁰⁹ CLUSTER BOMBS IN AFGHANISTAN, *supra* note 197, at 2.

of their design. We're going to—I think it's going to be blue. It obviously will take some time . . . They were probably yellow because they were very visible and people could see them lying around. The same for the cluster bombs. Unfortunately, they get used to running to yellow.²¹⁰

In addition to the tragic human consequences of cluster bombs, their effect on the environment can be equally devastating.²¹¹ “They deny access to farm and grazing land, pose a danger to livestock, impede access to shelter and water, and delay rehabilitation of essential infrastructure such as roads, bridges, and irrigation systems that are critical to a viable national economy.”²¹² A typical strike uses five cluster effect munitions, which would result in an average of over thirty-five unexploded submunitions.²¹³ If these unexploded munitions were located in an agricultural area or within a village, the fear of these munitions could effectively force the villagers to abandon their homes because they have no way of knowing if there are more or less than thirty-five unexploded bombs.²¹⁴

The Defense Department is not ignorant of the dangers and problems cluster bombs create. During Operation Desert Storm, unexploded submunitions killed twenty-five service personnel and directly hampered the retaking of Kuwait International Airport.²¹⁵ In January 2001, Secretary of Defense William Cohen issued a directive to all service Secretaries laying out the following:

Submunition weapons employment in Southwest Asia and Kosovo, and major theater war modeling, have revealed a significant unexploded ordnance (UXO) concern . . . It is the policy of the DoD to reduce overall UXO through a process of improvement in submunition system reliability—the

²¹⁰ News Transcript, Dep't of Def., DoD News Briefing—Secretary Rumsfeld and General Myers (Nov. 1, 2001), available at <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=2636>.

²¹¹ See Robert M. Augst, *Environmental Damage Resulting From Operation Enduring Freedom: Violations of International Law?*, 33 *Envtl. L. Rep. (Envtl. Law Inst.)* 10,668, 10,670 (2003).

²¹² *Id.*

²¹³ See McDonnell, *supra* note 200, at 57.

²¹⁴ *Id.* at 57-58.

²¹⁵ Thomas J. Herthel, *On the Chopping Block: Cluster Munitions and the Law of War*, 51 *A.F. L. REV.* 229, 240 (2001).

desire is to field future submunitions with a 99% or higher functioning rate.²¹⁶

The services were given until fiscal year 2005 before future procurement had to meet this standard and existing weapons could be used until expended.²¹⁷

As discussed, cluster bombs clearly create environmental damage by denying the population's use of the environment.²¹⁸ This damage can last more than one year if the area is not cleared of unexploded mines, and it clearly threatens human life, which would bring it under the proposed modifications to the Foreign Claims Act. The need to properly account for and internalize the true cost of using cluster bombs is even more pressing than the Pancevo example because of their widespread use.²¹⁹ Not only do these weapons affect the citizens of the countries where they are dropped, but they are responsible for the deaths of twenty-five United States Soldiers during the Persian Gulf War. Of these twenty-five casualties, seven were trained mine clearance personnel who died attempting to clear these weapons from an airfield in the middle of the day.²²⁰

Unlike the case of target selection,²²¹ the proposed modifications would likely have a preemptory effect against the use of cluster bombs. The United States must face the seemingly improbable decision to use cluster bombs against targets, face a widespread long-term cleanup,²²² and risk the very lives of the military members it intends to protect through the use of these weapons.²²³ In addition to risking lives, the United States would likely face a high cost and long effort to locate and destroy the unexploded submunitions.²²⁴ Faced with these decisions, it seems much more

²¹⁶ Memorandum from Secretary of Defense Cohen to the Secretaries of the Military Departments, Regarding DoD Policy on Submunition Reliability (Jan. 10, 2001), *reprinted in* DEPT OF DEF., DEFENSE SCIENCE BOARD TASK FORCE ON MUNITIONS SYSTEM app. III (2005) [hereinafter Secretary Cohen Memorandum], *available at* http://www.acq.osd.mil/dsb/reports/2005-09-MSR_Report%20_Final.pdf.

²¹⁷ *Id.*

²¹⁸ *See* Augst, *supra* note 211, at 10,670.

²¹⁹ *See* McDonnell, *supra* note 200, at 54.

²²⁰ *See id.* at 56.

²²¹ *See supra* Part IV.B.1.

²²² *See* McDonnell, *supra* note 200, at 54.

²²³ *See id.* at 56 (noting that the limited cleanup efforts of cluster bombs that the United States already attempted resulted in the death of seven specially trained unexploded ordnance soldiers).

²²⁴ *See id.* at 54.

probable that the United States would take the path already chosen by Secretary Cohen²²⁵ and improve the reliability of cluster munitions. The savings would be immense, including American lives,²²⁶ foreign citizen lives,²²⁷ environmental damage,²²⁸ and public relations.²²⁹ Finally, enacting the legislation change would likely force the United States to select more reliable weapons and hold the manufacturer accountable for the weapons dud rate to prevent the aforementioned problems.

3. Use of Depleted Uranium

Uranium has three general usable forms: naturally occurring uranium, enriched uranium, and depleted uranium.²³⁰ The World Health Organization provides an excellent summary of naturally occurring uranium:

Uranium is a naturally occurring metal that consists of three radioactive isotopes: U238, U235 and U234. The concentration by weight is approximately 98.3% U238, 0.72% U235 and 0.006% U234. Uranium is ubiquitous in the environment. It occurs in all rocks and soil. A typical concentration of U238, the main isotope, in the earth's crust is between 0.5 to 10 gram/t.²³¹

Depleted uranium is a waste product created when naturally occurring uranium is refined to extract the U-235 from the metal.²³² This process is completed by superheating the uranium into a gas and passing it through a series of centrifuges to separate out the lighter U235.²³³ The enriched U-235 is known as "enriched uranium" and can be used in commercial or military reactors, or as fuel for nuclear weapons.²³⁴

²²⁵ See Secretary Cohen Memorandum, *supra* note 216.

²²⁶ See McDonnell, *supra* note 200, at 56.

²²⁷ See Heavy Toll, *supra* note 207.

²²⁸ See Augst, *supra* note 211, at 10,670.

²²⁹ See generally FATALLY FLAWED, *supra* note 202 (criticizing the use of cluster bombs).

²³⁰ WORLD HEALTH ORG., DEPLETED URANIUM MISSION TO KOSOVO 6 (2001) [hereinafter DEPLETED URANIUM MISSION], available at http://www.who.int/ionizing_radiation/pub_meet/en/Report_WHO_depleted_uranium_Eng.pdf.

²³¹ *Id.*

²³² *Id.*

²³³ Robert Thompson, *Radioactive Warfare: Depleted Uranium Weapons, the Environment, and International Law*, 36 *Env'tl. L. Rep.* (Env'tl. Law Inst.) 10,474, 10,475 (2006).

²³⁴ *Id.*

When the process is complete, the waste product is known as depleted uranium because the U-235 is depleted from .72% to .25% of the total mass and the remaining material is only "about 60% [sic] as radioactive as natural uranium."²³⁵

In 1999, the Department of Energy estimated that the United States had 739,000 metric tons of depleted uranium and continues to produce approximately 30,000 metric tons every year.²³⁶ Depleted uranium is extremely dense, which creates a variety of commercial applications including counterweights in sailboats, aircraft, and as shielding from X-rays.²³⁷ Additionally, the United States Military and other countries use the metal for armor piercing rounds.²³⁸

The United States Military and its allies' use of depleted uranium has been a source of controversy since the First Gulf War.²³⁹ Critics have linked the use of depleted uranium to the Gulf War Syndrome affecting over 250,000 American Gulf War veterans, to the death of 1.5 million Iraqi soldiers and civilians since the Gulf War, and to an alarming increase in "[l]eukemia, cancer, birth defects and rare diseases" in Iraq.²⁴⁰ Iraqi scientists identified elevated levels of U-238 in the Tigris River, in the drinking water of various cities, and in vegetables, fish and meat.²⁴¹

Independent sources confirm that depleted uranium can contaminate the environment in a number of ways.²⁴² Dangers include immediate

²³⁵ DEPLETED URANIUM MISSION, *supra* note 230, at 6.

²³⁶ DEP'T OF ENERGY, ENVTL. SCIENCE DIV., DOE/EIS-0269, FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR ALTERNATIVE STRATEGIES FOR THE LONG-TERM MANAGEMENT AND USE OF DU HEXAFLUORIDE S-2 (2004), *available at* <http://web.ead.anl.gov/uranium/pdf/summary.pdf>; Henryk Bem & Firyal Bou-Rabee, *Environmental and Health Consequences of DU Use in the 1991 Gulf War*, 30 ENV'T INT'L 123, 124 (2004), *available at* <http://www.bren.ucsb.edu/academics/courses/595E/Session%207/BemEnv&HealthConseq.pdf>.

²³⁷ DEPLETED URANIUM MISSION, *supra* note 230, at 6.

²³⁸ James Naughton, Department of Defense, Briefing by James Naughton & Michael Kilpatrick on Depleted Uranium (Mar. 14, 2003), *available at* <http://www.defenselink.mil/Transcripts/Transcript.aspx?TranscriptID=2058>.

²³⁹ See Haavisto, *supra* note 10, at 573-83; Thompson, *supra* note 233, at 10,476; Damacio A. Lopez, Director, International DU Study Team, The Case for an Immediate Ban on the Military Use of Depleted Uranium, Presented at a Meeting of the European Parliament in Brussels, Belgium (June 10, 2003) [hereinafter Lopez Presentation], *available at* <http://www.grip.org/bdg/g1035.html>.

²⁴⁰ Lopez Presentation, *supra* note 239.

²⁴¹ *Id.*

²⁴² See *The Health Hazards of DU Munitions, Part II*, THE ROYAL SOCIETY, Mar., 2002, at 19-26 [hereinafter THE ROYAL SOCIETY II], *available at* <http://www.royalsoc.ac.uk/displaypagedoc.asp?id=11498>; Thompson, *supra* note 233, at 10,476.

aerial movement of the depleted uranium after the initial impact of the explosive, subsequent leakage of the uranium into the soil and transportation by plants, animals, or microbes, and migration of uranium into surface or ground water.²⁴³ The most dangerous exposure occurs immediately after impact when depleted uranium particles can be inhaled into the lungs.²⁴⁴ In worst case scenarios, this could lead to kidney failure within a few days.²⁴⁵ An additional acute risk of exposure can occur when children play near an impact site or handle a depleted uranium round.²⁴⁶ More widespread and long-term contamination can occur if depleted uranium reaches a water supply where it will remain indefinitely, thereby exposing the population to radiological and toxic risks.²⁴⁷

The United States Military downplays these risks as relatively insignificant.²⁴⁸ First, the effects in Iraq are expressly denounced because the primary source of the information was Saddam Hussein's government.²⁴⁹ Colonel James Naughton eloquently hypothesizes in a Defense Department briefing on depleted uranium that:

The Iraqis tell us terrible things happened to our people because you used it last time. Why do they want it to go away? They want it to go away because we kicked the crap out of them—okay? I mean, there's no doubt that DU gave us a huge advantage over their tanks. They lost a lot of tanks. Their soldiers can't be really amused at the idea of going out in basically the same tanks with some slight improvements and taking on Abrams again. That has got to be a huge morale—so wouldn't it be great if we could convince the world to make the U.S. give up DU?²⁵⁰

Department of Defense studies of ninety soldiers with significant exposure to depleted uranium due to friendly fire show no cases of cancer or kidney failure thirteen years after the exposure.²⁵¹ The military also points out

²⁴³ THE ROYAL SOCIETY II, *supra* note 242, at 21-23.

²⁴⁴ *Id.* at 24.

²⁴⁵ *Id.* at ix.

²⁴⁶ *Id.* at x, 24.

²⁴⁷ See Thompson, *supra* note 233, at 10,476.

²⁴⁸ See Naughton, *supra* note 238.

²⁴⁹ See *id.*

²⁵⁰ *Id.*

²⁵¹ *Id.*

that depleted uranium is 40% less radioactive than naturally occurring uranium that the general population is exposed to everyday.²⁵² Lastly, studies of uranium refiners show no increased risk of cancer associated with the long-term handling of natural uranium.²⁵³

Independent sources support the military's contention that the risks from exposure are generally minimal. Although depleted uranium can corrode and pollute local water sources, the expected increased risk of cancer due to depleted uranium is one person per million or lower.²⁵⁴ The increased risk for kidney failure is similarly low except for worst-case scenarios.²⁵⁵ World Health Organization studies on the effects of depleted uranium after its use in Kosovo show no significant impact on the environment.²⁵⁶ The study points out that even if seventy-two kilograms of depleted uranium were absorbed at a site with none escaping, the average uranium content of the soil would only increase by 5%.²⁵⁷

Based on the reports of the United Nations Environment Programme,²⁵⁸ the World Health Organization,²⁵⁹ and the United States' own data,²⁶⁰ it does not appear that depleted uranium poses a serious environmental risk. The proposed modification to the Foreign Claims Act would minimally affect the United States Military's use of depleted uranium. The one scenario where the use of depleted uranium should be monitored is when it is used near a water source.²⁶¹ Members of the Armed Forces should be mindful not to use depleted uranium weapons near a water source, but they obviously cannot always control when and where they engage the enemy. This would likely mean that the proposed legislation would rarely affect depleted uranium use, and it would be primarily retroactive as a humanitarian effort to provide clean water to a town with radioactively polluted water.²⁶²

²⁵² *Id.*

²⁵³ DEPLETED URANIUM MISSION, *supra* note 230, at 10.

²⁵⁴ THE ROYAL SOCIETY II, *supra* note 242, at x.

²⁵⁵ *Id.*

²⁵⁶ DEPLETED URANIUM MISSION, *supra* note 230, at 26, 29 (concurring with the Royal Society Study that the danger of depleted uranium is remote).

²⁵⁷ *Id.* at 28.

²⁵⁸ See U.N. ENV'T PROGRAMME, DEPLETED URANIUM IN KOSOVO: POST-CONFLICT ENVIRONMENTAL ASSESSMENT 34-36 (2001), available at <http://postconflict.unep.ch/publications/uranium.pdf>.

²⁵⁹ See DEPLETED URANIUM MISSION, *supra* note 230, at 25-31.

²⁶⁰ See Naughton, *supra* note 238.

²⁶¹ See DEPLETED URANIUM MISSION, *supra* note 230, at 30-31, 33.

²⁶² See generally *id.*

CONCLUSION

Environmental damage has been a certainty in warfare throughout history and remains an issue today. Although some environmental damage is inevitable, recent conflicts have demonstrated the ability of the United States and its allies to choose targets and strike them at will with the weapon of their choosing,²⁶³ thereby limiting environmental damage.

Although the United States has the ability to limit environmental damage during conflict, there is little legal framework for the United States to exercise this restraint. International law does provide a framework for identifying when environmental damage is excessive through the lens of necessity, proportionality, humanity, and distinction; however, the United States is unlikely to submit to international jurisdiction for an environmental claim for damages or a criminal claim against a member of the armed forces.

Although the United States has little incentive to submit to international jurisdiction, there is evidence from recent conflicts that the United States could benefit from more careful scrutiny of the long-term environmental consequences of its targets and ordnance. One possible means of providing this scrutiny and forcing the Department of Defense to internalize the long-term costs of environmental damage is by modifying the Foreign Claims Act. This Act already permits international claimants to recover for accidental damage caused by members of the Department of Defense as long as the claimants are friendly to the United States and the damage does not result directly or indirectly from combat operations. A proposed modification is to allow claimants to recover for environmental damage lasting more than one year and posing a significant risk to human life. This proposed modification is a balance between over-compensating for every crater on the battlefield and the current situation of under-compensating and creating extensive environmental damage on the battlefield.

Ultimately, expanding the Foreign Claims Act to compensate for long-term environmental damage would go a long way toward achieving the ultimate goal of the Foreign Claims Act: “[t]o promote and to main-

²⁶³ See generally *Nato Leadership Splits Revealed*, *supra* note 182 (demonstrating that during the bombing of Serbia, NATO had the unfettered ability to choose when and where to strike).

tain friendly relations" with other countries.²⁶⁴ The United States would hold manufacturers of ordnance to stricter standards and abandon its fire-and-forget mentality. As evidenced, this modification could help save the lives of its own Armed Forces.²⁶⁵ Additionally, commanders would select targets with the long-term environmental consequences to the surrounding population clearly in mind and would not depend on third-party countries for the cleanup. Finally, the modification would give the military commanders on the ground more flexibility to compensate and clean up affected areas, thereby improving relationships and security.²⁶⁶

Ultimately, the question of expanding the Foreign Claims Act to protect the environment of foreign countries is up to the discretion of the United States Congress. It requires leadership in Congress to recognize that the United States should be a world leader in protecting the environment, and not simply pass the environmental costs of warfare along to other countries. As the largest economic and military power in the world, the United States must act as a model for the free world in protecting foreign citizens and their environments during war.

²⁶⁴ Foreign Claims Act, 10 U.S.C. § 2734(a) (West Supp. 2007).

²⁶⁵ See Herthel, *supra* note 215, at 239-40.

²⁶⁶ See Zorpette, *supra* note 128.