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THE ENVIRONMENT AS AN IDEOLOGICAL WEAPON: A PROPOSAL TO CRIMINALIZE ENVIRONMENTAL TERRORISM

*Timothy Schofield**

Global ecosystems are emerging as both targets and conduits of terrorist activity. The end of the Cold War and the changing face of terrorism have contributed to this development. Domestic law has not, however, kept pace with this threat. Applicable legal doctrines do not operate effectively with existing anti-terrorism strategies and fail to express adequately societal outrage at such conduct. A new criminal law of ecocide will provide more appropriate mechanisms for confronting this emerging threat.

INTRODUCTION

Environmental terrorism, like environmental warfare, involves the utilization of the forces of nature as weapons.¹ Environmental terrorists deliberately destroy or manipulate the environment in the name of political or ideological zealotry. Although such tactics have long been utilized in times of war, they have only recently emerged as a viable option for terrorists.² The end of the Cold War and the changing face of terrorism are the most significant factors contributing to this development.³

This emerging threat has outpaced the law's ability to respond. Legal mechanisms available to confront environmental terrorism rely

* Production Editor, BOSTON COLLEGE ENVIRONMENTAL LAW REVIEW, 1998-1999.

¹ See Arthur H. Westing, *Environmental Warfare*, 15 ENVTL. L. 645, 646 (1985).

² See Stephan H. Leader, *The Rise of Terrorism*, SEC. MGMT., Apr. 1, 1997, available in 1997 WL 9533016.

³ See Robert Kupperman, *A Dangerous Future*, in TERRORISM IN THE UNITED STATES 91, 95 (Frank McGuckin ed., 1997).

on existing doctrines of terrorism and environmental law which are inadequate for dealing with the unique problem of environmental terrorism.⁴

These legal doctrines are inappropriate for confronting the specific threat of environmental terrorism because: (1) complex environmental statutes do not operate effectively within the existing anti-terrorism strategy of treating terrorists as common criminals; and (2) these doctrines do not adequately accomplish the expressive function of criminal law—to give force and symbolic representation to moral values by conveying condemnation and disgrace.⁵

A new criminal law is required to confront environmental terrorism. A law prohibiting ecocide—the intentional or reckless manipulation or destruction of any aspect of the physical environment⁶—will provide a mechanism for punishing environmental terrorists within existing legal structures while validating societal condemnation of such conduct.

I. BACKGROUND

A. *What Is Environmental Terrorism?*

Environmental terrorism, like environmental warfare, involves the utilization of the forces of nature for hostile purposes.⁷ Environmental terrorism includes both the targeting of the environment itself, such as deliberate contamination of water or agricultural resources, and the use of the environment as a conduit for destruction, such as releasing chemical or biological weapons into the atmosphere.⁸

The elements of the global ecosystem that have been, or can be, used for hostile purposes range from complex nuclear forces to the simple, but effective, power of water.⁹ The utilization of such forces

⁴ See BRENT SMITH, *TERRORISM IN AMERICA* 5 (1996); Major Bernard K. Schafer, *The Relationship Between the International Law of Armed Conflict and Environmental Protection: The Need to Evaluate What Types of Conduct are Permissible During Hostilities*, 19 CAL. W. INT'L L.J. 287, 288–89 (1988–89).

⁵ See Susan Hedman, *Expressive Function of Criminal Sanctions in Environmental Law*, 59 GEO. WASH. L. REV. 889, 896 (1991).

⁶ See Mark Allan Gray, *The International Crime of Ecocide*, 26 CAL. W. INT'L L.J. 215, 258–59 (1996).

⁷ See Westing, *supra* note 1, at 646.

⁸ See *id.*

⁹ See *id.*

has, in the past, had devastating results in terms of fatalities, physical damage, and ecological impact.¹⁰

B. *The Emergence of Environmental Terrorism*

The environment has been used as a weapon of war for centuries.¹¹ Throughout history, aggressors and defenders have utilized the forces of nature against their enemies.¹² In the seventeenth century, for example, the Dutch deliberately flooded their own lowlands to stem the advance of their enemies.¹³ During the Vietnam War, the United States sprayed herbicides over vast areas of South Vietnam to destroy forests and vegetation and deny its enemy cover, mobility, and sustenance.¹⁴ International treaties and the law of war now proscribe such tactics in conflicts between nations.¹⁵ No mechanism exists, however, for deterring terrorists from engaging in deliberate manipulation and destruction of the environment. In fact, the end of the Cold War and the changing face of terrorism have made environmental terrorism an exceedingly likely possibility.¹⁶

1. Post-Cold War Terrorism

Terrorists, like warring nations before them, seek to harness the forces of nature because a modest expenditure of time and effort can result in devastating long-term destruction.¹⁷ In the past, the difficulty of acquiring the means to bring about such destruction and the strictures of Cold War geopolitics limited the environmental threat posed by terrorists.¹⁸ The end of the Cold War has, however, largely eliminated these constraints.¹⁹

¹⁰ See *id.* at 665.

¹¹ See Michael N. Schmitt, *Green War: An Assessment of the Environmental Law of International Armed Conflict*, 22 YALE J. INT'L L. 1, 7-8 (1997).

¹² See *id.*

¹³ See *id.* at 7.

¹⁴ See *id.* at 9.

¹⁵ See Michael D. Diederich, Jr., *Law of War and Ecology—A Proposal for a Workable Approach to Protecting the Environment Through the Law of War*, 136 MIL. L. REV. 137, 149-52 (1992). As evidenced by the conduct of Iraq during the Persian Gulf War, nations still resort to environmental warfare despite such prohibitions.

¹⁶ See Kupperman, *supra* note 3, at 95.

¹⁷ See Westing, *supra* note 1, at 646.

¹⁸ See Roberta Smith, *America Tries to Come to Terms with Terrorism: The United States Anti-Terrorism and Effective Death Penalty Act of 1996 v. The British Anti-Terrorism Law and International Response*, 5 CARDOZO J. INT'L & COMP. L. 249, 249-50 (1997).

¹⁹ See *id.*

The political parameters within which terrorists were forced to operate during the Cold War tended to constrain rash and ill-considered attacks.²⁰ The United States and the Soviet Union took great pains to control terrorism, particularly with regard to preventing nation-states from supporting terrorist activity.²¹ Today, those political parameters have been replaced by fervent religious, ethnic, and nationalist struggles.²²

Terrorist organizations are also turning to outlaw nations and organized crime for revenue.²³ Rogue states such as Iran and North Korea, no longer compelled to defer to superpower wishes, now readily support terrorist activities throughout the world.²⁴

The end of the Cold War has also accelerated the availability of weapons of mass destruction.²⁵ In the words of Israeli Prime Minister Benjamin Netanyahu, "the disappearance of Communist rule in the Kremlin opened up the spigot of nuclear technology that now flows from the impoverished remnants of the Soviet Union."²⁶

The threat of nuclear terrorism is not new, but the collapse of the Soviet Union has greatly increased its viability.²⁷ In 1994, FBI Director Louis Freeh told cadets and faculty of the Russian Police College that "one criminal threat looms larger than [all] others: the theft or diversion of radioactive materials in Russia and Eastern Europe."²⁸

"Nuclear leakage"—the sale, theft, or diversion of nuclear weapons and materials once held securely by the Soviet government—is already a reality.²⁹ In August, 1995, German police uncovered 350 grams of atomic fuel aboard a commercial flight from Moscow to Munich.³⁰ The implications of such leakage will be discussed *infra* in Section C(1).

²⁰ See Kupperman, *supra* note 3, at 95.

²¹ See *id.*

²² See Leader, *supra* note 2.

²³ See Kupperman, *supra* note 3, at 95.

²⁴ See Leader, *supra* note 2.

²⁵ See BENJAMIN NETANYAHU, FIGHTING TERRORISM 129 (1995).

²⁶ *Id.*

²⁷ See *id.*

²⁸ Bruce W. Nelan, *Formula for Terror: The Former Soviet Arsenal Is Leaking into the West, Igniting Fears of a New Brand of Nuclear Horror*, TIME, Aug. 29, 1994, at 46.

²⁹ GRAHAM T. ALLISON ET AL., AVOIDING NUCLEAR ANARCHY 1-2 (1996).

³⁰ This mixed oxide fuel (MOX), designed for reactors, would have been usable in a bomb because it contained plutonium enriched to 87%. See Nelan, *supra* note 28, at 46.

2. The New Terrorist

The emerging threat of environmental terrorism also arises from the changing nature of terrorism itself.³¹ Traditionally, terrorism has been violence, or the threat of violence, calculated to create an atmosphere of fear and alarm.³² Terrorism has generally consisted of acts intended to send a message or coerce a particular course of action.³³ For many years, to paraphrase terrorism expert Brian Jenkins, terrorists wanted a lot of people watching—not a lot of people dead.³⁴

Evidence increasingly suggests, however, that many terrorists have shifted their goals and are now more interested in mass destruction.³⁵ Recent incidents, such as the World Trade Center and Oklahoma City bombings and the Tokyo Subway Sarin gas attack, seem to underscore this trend.³⁶ University of Oklahoma terrorism expert Stephan Sloan has said that “the old view was that terrorists were concerned about public opinion, now they’re preoccupied more with their rewards in the next life, not this one, and they view it to be a sacred obligation . . . to bring civilization to its knees.”³⁷ It is for this new brand of terrorist that the destructive forces of nature may have irresistible appeal.³⁸

Groups and individuals motivated by apocalyptic religious or ideological zeal, rather than traditional political calculus, are more likely to engage in environmental terrorism because they believe that they are morally justified in doing so.³⁹ The legitimizing force of fanatical ideology empowers these groups to engage in the sort of conduct that many politically motivated terrorists would regard as immoral or counter-productive.⁴⁰

³¹ See Leader, *supra* note 2.

³² See KEVIN JACK RILEY & BRUCE HOFFMAN, DOMESTIC TERRORISM 3 (1995).

³³ See Michael Stohl, *Demystifying the Mystery of International Terrorism*, in INTERNATIONAL TERRORISM 81, 82 (Charles W. Kegley, Jr. ed., 1990).

³⁴ See Leader, *supra* note 2.

³⁵ See *id.*

³⁶ See *id.*

³⁷ John Hanchette & Dennis Camire, *Deadly Germs Strike Fear into U.S. Terror Fighters*, SALT LAKE TRIB., Mar. 30, 1997, at A4.

³⁸ Steven Strasser & Tom Post, *A Cloud of Terror—And Suspicion*, NEWSWEEK, Apr. 3, 1995, at 36.

³⁹ See Brian Michael Jenkins, *Perspective on Terrorism*, L.A. TIMES, Dec. 3, 1997, at B7.

⁴⁰ See Gavin Cameron, *Nuclear Terrorism: A Real Threat?*, JANE'S INTELLIGENCE REV., Sep. 1, 1996, at 422.

This is not to suggest that more traditionally motivated terrorists would not find some value in environmental terrorism.⁴¹ The broader goals of such organizations, however, often create self-imposed constraints.⁴² Wanton environmental terrorism could tarnish a group's image, imperil the group's cohesion, alienate perceived constituents, and provoke crackdowns that the group might not survive.⁴³

The need to contain terrorist activity to that which the audience considers appropriate does not exist as a constraining influence in the case of religious or ideological terror.⁴⁴ The constraints imposed by a political cause do not apply to those who believe that they act for religious or ideological purposes.⁴⁵ The number of groups acting for such purposes seems to be on the rise.⁴⁶

Although Islamic extremism, which inspired the World Trade Center bombers, is the most widely known of fanatical motivations, it is by no means the only one.⁴⁷ Millennial cults—groups that believe that the new millennium will bring about the end of civilization—are also prone to mass violence.⁴⁸ The AUM Shinri Kyo cult, for example, which carried out the 1995 nerve gas attack on the Tokyo subway, used such beliefs to justify the production and use of chemical weapons.⁴⁹ They believed that a chemical attack would induce the apocalypse they saw as inevitable.⁵⁰

Many domestic groups are also motivated by radical ideologies which transcend traditional terrorist strategy and self-restraint.⁵¹ The right-wing "patriot" movement, for example, is motivated by its paranoid fear of an amorphous conspiracy involving the federal government, the United Nations, and other "sinister" forces.⁵² This paranoia has fueled unprecedented growth in recent years in the membership of militia and patriot organizations.⁵³

⁴¹ See *id.*

⁴² See *id.*

⁴³ See *id.*

⁴⁴ See Jenkins, *supra* note 39, at B7.

⁴⁵ See *id.*

⁴⁶ See Strasser & Post, *supra* note 38, at 36.

⁴⁷ See Leader, *supra* note 2.

⁴⁸ See Strasser & Post, *supra* note 38, at 36.

⁴⁹ See Leader, *supra* note 2.

⁵⁰ See *id.*

⁵¹ See Thomas Halpern, *Militia Movement: Prescription for Disaster*, in *TERRORISM IN THE UNITED STATES* 51, 52 (Frank McGuckin ed., 1997).

⁵² See *id.*

⁵³ See NETANYAHU, *supra* note 25, at 129.

In addition to xenophobic motivations, this new brand of terrorism is marked by more diffuse organizational structures.⁵⁴ Traditional terrorist groups have generally been well-defined bodies with a coherent, albeit loose, command and control structure.⁵⁵ Under such a structure, the organization dedicates time and resources to fundraising and publicity in addition to the planning of future actions.⁵⁶ The new breed of terrorist is little concerned with such organizational considerations.⁵⁷ Nor do these groups seek legitimacy, recognition or concessions to their cause and as such are disinclined to negotiate.⁵⁸

In April, 1995, the acting deputy director of the Central Intelligence Agency (CIA), William Studeman, warned of the threat posed by this new breed of terrorist: "These groups—often ad hoc—are even more dangerous in some ways than the traditional group because they do not have a well-established organizational identity and they tend to decentralize and compartmentalize their activities."⁵⁹ Israeli terrorism expert Yonah Alexander has characterized this new mode of operation as "well-organized disorganization."⁶⁰

C. *Methods of Environmental Terrorism*

1. The Nuclear Option

The classic scenario of nuclear terrorism involves the detonation of a nuclear device in an urban environment.⁶¹ While this is certainly one nuclear option available to terrorists, it is by no means the only one.⁶² Similar devastation can be achieved by sabotaging commercial nuclear reactors or by attacking a transporter of nuclear weapons or material.⁶³

An act of nuclear terrorism does not require an overt act of violence.⁶⁴ On November 23, 1995, a Chechen guerrilla leader, Shamy

⁵⁴ See Leader, *supra* note 2.

⁵⁵ See Cameron, *supra* note 40, at 422.

⁵⁶ See *id.*

⁵⁷ See *id.*

⁵⁸ See *id.*

⁵⁹ *Id.*

⁶⁰ Leader, *supra* note 2.

⁶¹ See Konrad Kellen, *The Potential for Nuclear Terrorism: A Discussion*, in PREVENTING NUCLEAR TERRORISM 104, 106 (Paul Leventhal & Yonah Alexander eds., 1987).

⁶² See *id.*

⁶³ See *id.* at 107.

⁶⁴ See Cameron, *supra* note 40, at 422.

Basayev, informed a Russian television network that four cases of radioactive cesium had been hidden around Moscow.⁶⁵ The network later discovered a thirty-two kilogram case of the material, emitting over 300 times the amount of normal background radioactivity, in Moscow's Ismailovo Park.⁶⁶ Although the actual threat proved minimal, the incident highlighted the danger posed by even passive uses of nuclear materials by terrorists.⁶⁷

The consensus among weapons designers is that many terrorist groups could build a nuclear device given an adequate supply of fissile (weapons-grade) material.⁶⁸ A simple, well-known design containing one hundred pounds of highly enriched uranium (HEU), roughly the size of a grapefruit, could produce a blast equivalent to 10,000 to 20,000 tons of TNT.⁶⁹ Under normal circumstances, this would devastate a three square mile urban area.⁷⁰

Easier still would be the construction of a "dirty bomb"—a conventional device with a highly radioactive coating.⁷¹ Detonation of a bomb wrapped in radioactive material could be used to contaminate a discrete area.⁷² The CIA has expressed concern that such a device could be used to contaminate buildings or water supplies.⁷³

Terrorists may also be able to achieve their nuclear objectives by employing traditional tactics on nuclear targets.⁷⁴ A terrorist group that is unwilling or unable to build a nuclear weapon could attack a nuclear power plant or a uranium processing facility with an easily portable missile.⁷⁵ While some experts question the efficacy of such attacks,⁷⁶ others conclude that the public faces legitimate danger from terrorist attacks at commercial nuclear facilities.⁷⁷

Ultimately, from an environmental standpoint, the means to the terrorists' nuclear ends are of little consequence. The more relevant

⁶⁵ See *id.*

⁶⁶ See *id.*

⁶⁷ See *id.*

⁶⁸ See *id.*

⁶⁹ See ALLISON, *supra* note 29, at 1-2.

⁷⁰ See *id.*

⁷¹ Cameron, *supra* note 40, at 422.

⁷² See *id.*

⁷³ See *id.*

⁷⁴ See Kellen, *supra* note 61, at 107.

⁷⁵ See *id.*

⁷⁶ See Robert K. Mullen, *Nuclear Violence*, in PREVENTING NUCLEAR TERRORISM 231, 239-40 (Paul Leventhal & Yonah Alexander eds., 1987).

⁷⁷ See Gerald Pollack, *Severe Accidents and Terrorist Threats at Nuclear Reactors*, in PREVENTING NUCLEAR TERRORISM 66, 67 (Paul Leventhal & Yonah Alexander eds., 1987).

consideration is the impact that "going nuclear" is likely to have on the environment. While the innumerable variables at play make it virtually impossible to quantify the specific environmental effects of an act of nuclear terrorism,⁷⁸ potential outcomes can be inferred from one of nuclear history's tragic case studies.

In 1986, an experiment at the Chernobyl nuclear power station in Ukraine spun out of control and resulted in a tremendous blast which sent tons of highly radioactive uranium and graphite into the atmosphere.⁷⁹ At least seventy percent of this contamination descended on the people, crops, and animals of Belarus.⁸⁰ In the decade since the Chernobyl explosion, Belarus has become a nuclear wasteland.⁸¹ Only one percent of the landscape of Belarus remains uncontaminated.⁸² More than 30,000 acres of the richest farmland in Russia, Ukraine, and Belarus have been abandoned, and at least 70,000 square kilometers of cropland are radioactive.⁸³

Scientists from the Belarussian National Science and Research Institute of Agricultural Radiobiology estimate that it will be at least 600 years before crops can be grown safely again in the most contaminated regions.⁸⁴ The fallout from Chernobyl has contaminated the entire ecosystem of the region.⁸⁵ The Pripjat River, which flows by the plant and is the source of all washing and drinking water in the region, is now one of the most radioactive rivers in Belarus.⁸⁶

Inside the thirty kilometer exclusion zone around Chernobyl, gigantic pine needles and leaves grow from mutated pine and birch trees.⁸⁷ Fish and animals that consume irradiated feed accumulate radiation in their tissue which is then carried up the food chain.⁸⁸ In essence, the nuclear accident at Chernobyl resulted in ecological genocide in the region surrounding the plant.⁸⁹

⁷⁸ See *id.*

⁷⁹ See WILLIAM THOMAS, SCORCHED EARTH: THE MILITARY'S ASSAULT ON THE ENVIRONMENT 53 (1995).

⁸⁰ See *id.*

⁸¹ See *id.*

⁸² See *id.*

⁸³ See *id.*

⁸⁴ See THOMAS, *supra* note 79, at 53.

⁸⁵ See *id.*

⁸⁶ See *id.*

⁸⁷ See *id.*

⁸⁸ See *id.*

⁸⁹ See THOMAS, *supra* note 79, at 53.

While it is unlikely that terrorists could unleash a nuclear offensive of the magnitude of Chernobyl, it is not implausible that a strategically targeted attack could wreak analogous environmental devastation. A nuclear offensive in the agricultural heartland of Nebraska or Iowa, for example, could contaminate thousands of acres of the world's most fertile farmland. Likewise, radioactive adulteration of the headwaters of the Mississippi or the Colorado river could have devastating effects on the ecosystems of numerous communities in dozens of states.

2. Chemical and Biological Terrorism

Chemical and biological terrorism has recently emerged as a legitimate threat.⁹⁰ Chemical and biological weapons threaten the earth's numerous ecological systems by using the environment as a conduit of violence.⁹¹

"Until this decade, chemical and biological weapons were the province of superpowers and renegade states such as Iraq and North Korea."⁹² In the last ten years, however, the class of potential chemical and biological powers has expanded to include a range of non-state actors such as terrorist groups, religious cults, and even some individuals.⁹³ Terrorism experts have expressed concern that the threat of chemical and biological terrorism is overshadowed by efforts to prevent nuclear proliferation.⁹⁴ Chemical and biological weapons, they assert, contain much of the same destructive capacity as their nuclear counterparts, but are cheaper and easier to obtain.⁹⁵ A basement-sized facility equipped with garden-variety medical supplies, for example, is sufficient for producing these weapons of mass destruction.⁹⁶

The raw materials needed to produce chemical or biological weapons are easily purchased on the open market.⁹⁷ In 1995, a microbiologist with ties to right-wing patriot groups was arrested for fraudu-

⁹⁰ See David E. Kaplan, et al., *Terrorism's Next Wave: Nerve Gas and Germs Are the New Weapons of Choice*, U.S. NEWS & WORLD REPORT, Nov. 17, 1997, at 28.

⁹¹ See SUSAN D. LANIER-GRAHAM, *THE ECOLOGY OF WAR* 93 (1993).

⁹² Kaplan, *supra* note 90, at 28.

⁹³ James R. Ferguson, *Biological Weapons and U.S. Law*, JAMA, Aug. 6, 1997, at 357.

⁹⁴ See Strasser, *supra* note 38, at 36.

⁹⁵ See Cameron, *supra* note 40, at 422. Although its effects would be the most destructive, an incident of nuclear terrorism is actually the least likely scenario. See Kaplan, *supra* note 90, at 28.

⁹⁶ See Robert Wright, *Be Very Afraid: Nukes, Nerve Gas and Anthrax Spores*, THE NEW REPUBLIC, May 1, 1995, at 19.

⁹⁷ See Leader, *supra* note 2.

lently purchasing three vials of *Yersinia pestis*, the microorganism that causes bubonic plague.⁹⁸ He was able to acquire the deadly virus from a Maryland research supplier simply by placing his order on the letterhead of a fictitious research laboratory.⁹⁹

The technological expertise necessary to concoct deadly chemical or biological agents is also readily available.¹⁰⁰ Numerous books are available which provide recipes for biological or chemical weapons.¹⁰¹ In March 1996, Senate investigators found that it took only thirty minutes on the Internet to find instructions on the manufacture of the nerve agent sarin.¹⁰²

Chemical or biological terrorism, like nuclear terrorism, is more likely to emerge from the fringes of the terrorist culture.¹⁰³ Splinter groups, small ad hoc conspiracies, and ideological zealots may be drawn to the anonymity of this type of terrorism.¹⁰⁴ Many biological and chemical agents are invisible, odorless, and tasteless.¹⁰⁵ Victims of an attack may not realize what has occurred until hours or days later.¹⁰⁶ Such anonymity is particularly appealing to the new breed of terrorist who cares little for publicity or notoriety.¹⁰⁷

As with other forms of environmental terrorism, chemical and biological weapons trace their ancestry to the tactics of war. Germ warfare has been utilized for centuries.¹⁰⁸ In ancient times, soldiers routinely poisoned their enemies by dumping dead horses into their water wells.¹⁰⁹ In the nineteenth century, American settlers engaged in genocide against Native Americans by distributing blankets infested with smallpox.¹¹⁰ More recently, Cold War strategists pioneered chemical and biological weapons that contaminate only those who

⁹⁸ See Hanchette, *supra* note 37, at A4.

⁹⁹ See *id.* The suspect, Larry Wayne Harris, was arrested again in 1998 for possession of weapons-grade anthrax cultures, but the charges were later dropped when it was determined that the cultures were of the more benign research variety. See *id.*

¹⁰⁰ See Leader, *supra* note 2.

¹⁰¹ See Kaplan, *supra* note 90, at 28.

¹⁰² See Leader, *supra* note 2.

¹⁰³ See Jenkins, *supra* note 39, at B7.

¹⁰⁴ See Wright, *supra* note 96, at 19.

¹⁰⁵ See Jeffrey Simon, *Biological Terrorism: Preparing to Meet the Threat*, JAMA, Aug. 6, 1997, at 428.

¹⁰⁶ See *id.*

¹⁰⁷ See Leader, *supra* note 2.

¹⁰⁸ See Harry Levins, *How to Kill Lots and Lots of People: Weapons of Mass Destruction Come in Three Varieties and You'd Be Surprised Who Has Them*, ST. LOUIS POST-DISPATCH, Nov. 23, 1997, at B1.

¹⁰⁹ See *id.*

¹¹⁰ See Wright, *supra* note 96, at 19.

come in contact with the deadly agents so as to avoid contaminating their own forces following an attack.¹¹¹ Terrorists, however, are not limited by the need to protect advancing troops.

Although chemical and biological weapons are generally grouped together, it is important to recognize the differences in the threats posed by these toxic weapons, commonly referred to as the "poor man's atomic bomb."¹¹²

a. *Chemical Agents*

Chemical weapons of mass destruction, such as mustard gas, phosgene, and chlorine, were first used in World War I and have been used in isolated conflicts in the decades since.¹¹³

Chemical agents are fast-acting synthetic compounds originally designed to poison enemy troops.¹¹⁴ These weapons range in potency from relatively mild harassing agents such as tear gas, to blood and blister agents such as cyanide and mustard gas.¹¹⁵

Nerve agents are the most toxic of chemical weapons.¹¹⁶ Nerve agents kill by attacking the body's central nervous system.¹¹⁷ Those who inhale nerve gas or absorb it through the skin start shaking uncontrollably and quickly suffocate.¹¹⁸

Chemical weapons come in either persistent or non persistent forms.¹¹⁹ A persistent agent that lingers for days or even weeks can close off large areas to human activity.¹²⁰ Nonpersistent agents blow away or dry up quickly.¹²¹

The ingredients necessary for producing many of these compounds are available commercially.¹²² Moreover, experts believe that anyone

¹¹¹ See *id.*

¹¹² Keith Wilkerson & Charleston C.K. Wang, *Beware Toxic Terrorism*, THE CINCINNATI INQUIRER, Oct. 8, 1997, at A15.

¹¹³ See *Proliferation of Weapons of Mass Destruction, Hearing Before the Senate Perm. Subcomm. on Investigations*, 104th Reg. Sess. (1995) (testimony of Frank E. Young, M.D., Director, National Disaster Medical System).

¹¹⁴ See LANIER-GRAHAM, *supra* note 91, at 93.

¹¹⁵ See *id.*

¹¹⁶ See *id.*

¹¹⁷ See Levins, *supra* note 108, at B1.

¹¹⁸ See *id.*

¹¹⁹ See *id.*

¹²⁰ See *id.*

¹²¹ See *id.*

¹²² See Kaplan, *supra* note 90, at 28.

with the skill to make pesticides can make chemical weapons.¹²³ The first major act of chemical terrorism supports this conclusion.

In March of 1995, the AUM Shinri Kyo cult, an obscure sect of New-Age zealots based in Japan, unleashed a chemical assault on the Tokyo subway system.¹²⁴ Five chemical devices disguised as lunch boxes and soft drink containers spewed the nerve agent sarin throughout several subway cars converging on downtown Tokyo.¹²⁵ Many passengers collapsed within minutes, twelve people died within days, and some 5500 were injured.¹²⁶ It took the members of AUM Shinri Kyo less than a year to develop the sarin used in the attack.¹²⁷

While the attack apparently fell short of the cult's expectations, its mere occurrence sent shockwaves through the world.¹²⁸ AUM Shinri Kyo had set an important precedent by being the first terrorist group to utilize a weapon of mass destruction.¹²⁹

Terrorism experts have long believed that once the threshold was crossed, the use of non-conventional weapons by terrorists would spread rapidly.¹³⁰ The Tokyo attack had global implications, says Israeli terrorism expert Yonah Alexander, because it represented "a quantum leap to terrorism by mass destruction."¹³¹ The FBI reports that since the incident, the number of credible threats to use chemical weapons has multiplied exponentially.¹³²

Although the Tokyo attack has the dubious distinction of being the first wide-scale act of chemical terrorism, it was actually the first application of a strategy that has been contemplated by the terrorist fringe for many years.¹³³ In 1985, for example, federal agents raided the compound of the right-wing group the Covenant, Sword and Arm of the Lord.¹³⁴ Among other things, they found a drum containing thirty-five gallons of cyanide intended for poisoning the water supply of Washington, D.C. or New York City.¹³⁵

¹²³ See Levins, *supra* note 108, at B1.

¹²⁴ See *id.*

¹²⁵ See Strasser, *supra* note 38, at 36.

¹²⁶ See Cameron, *supra* note 40, at 422.

¹²⁷ See *id.*

¹²⁸ See Strasser, *supra* note 38, at 36.

¹²⁹ See Cameron, *supra* note 40, at 422.

¹³⁰ See *id.*

¹³¹ Strasser, *supra* note 38, at 36.

¹³² See Kaplan, *supra* note 90, at 28.

¹³³ See Leader, *supra* note 2.

¹³⁴ See *id.*

¹³⁵ See *id.*

b. *Biological Agents*

Biological weapons contain disease-causing organisms designed to produce sickness and death.¹³⁶ They do not necessarily, as is often assumed, start epidemics.¹³⁷ Most biological agents kill by direct exposure.¹³⁸ Anthrax spores, for example, multiply within the lungs of the victim, but do not render the victim contagious to others.¹³⁹

Biological weapons can have a devastating impact on the natural environment.¹⁴⁰ The introduction of microorganisms can alter the ecosystem of a region to such an extent that it may become uninhabitable for an indefinite period of time.¹⁴¹ During 1941–42, for example, the British detonated experimental anthrax bombs on the Scottish island of Gruinard.¹⁴² Millions of anthrax spores became buried in the soil of the island.¹⁴³ Despite decades of attempts to decontaminate the island, it remains uninhabitable to this day.¹⁴⁴

Biological weapons, such as anthrax, are cheap and easy to produce.¹⁴⁵ The recipes for such agents are available from a multitude of sources and the ingredients are routinely bought from commercial vendors or passed from professor to graduate student.¹⁴⁶

Law enforcement officials no longer ask “if” an act of biological terrorism will occur, but rather, “when.”¹⁴⁷ “This is what the next big thing will look like,” predicts John Sopko, chief minority counsel to the Senate Permanent Subcommittee on Investigations, “[a] bunch of people will start coming into the hospitals very sick and within seventy-two hours they will be dead.”¹⁴⁸

An Office of Technology Assessment (OTA) report on weapons of mass destruction estimates that a single warhead of anthrax spores landing in Washington, D.C. on a day of moderate wind could kill 30,000 to 100,000 people.¹⁴⁹ A warhead is not, however, the most likely

¹³⁶ See LANIER-GRAHAM, *supra* note 91, at 93.

¹³⁷ See Wright, *supra* note 96, at 19.

¹³⁸ See *id.*

¹³⁹ See *id.*

¹⁴⁰ See *id.*

¹⁴¹ See *id.*

¹⁴² See Wright, *supra* note 96, at 19.

¹⁴³ See *id.*

¹⁴⁴ See LANIER-GRAHAM, *supra* note 91, at 93.

¹⁴⁵ See Wright, *supra* note 96, at 19.

¹⁴⁶ See *id.*

¹⁴⁷ See Kaplan, *supra* note 90, at 28.

¹⁴⁸ Hanchette, *supra* note 37, at A4.

¹⁴⁹ See Wright, *supra* note 96, at 19.

way in which terrorists would utilize this deadly weapon.¹⁵⁰ A more realistic scenario, also assessed by OTA, is that of a small, private plane loaded with 220 pounds of anthrax spores flying over Washington.¹⁵¹ Such a plane, spraying an invisible mist, could kill one million people on a day with moderate wind.¹⁵² Predictions of impending biological terrorism are not unfounded.

In 1995, four members of the Patriot Council, an anti-government group, were convicted of planning to assassinate federal agents with a biological toxin called ricin.¹⁵³ This incredibly potent agent is a powdered protein extract of common castor beans.¹⁵⁴ The slightest amount of ricin, if ingested, absorbed, or inhaled, kills by literally exploding the red blood cells of its victim.¹⁵⁵ The poison is 6000 times more toxic than cyanide and there is no antidote.¹⁵⁶

Members of the Patriot Council planned to mix the ricin with a solvent that is easily absorbed through the skin, and put the mixture on doorknobs and steering wheels with which the victims would be sure to come into contact.¹⁵⁷ The 0.7 grams of ricin they produced would have been sufficient to kill 100 people.¹⁵⁸

3. The Power of Water

Water represents one of the largest sources of stored energy in the environment.¹⁵⁹ The thousands of levees, dikes, and dams throughout the United States, for example, contain massive destructive capacity.¹⁶⁰ The static energy of the bodies of water held in check by some of these barriers represent a level of destructive force on par with a nuclear accident.¹⁶¹ Hoover Dam, located on the Colorado River be-

¹⁵⁰ See *id.*

¹⁵¹ See *id.*

¹⁵² See *id.*

¹⁵³ See Leader, *supra* note 2.

¹⁵⁴ See *id.*

¹⁵⁵ See *id.*

¹⁵⁶ See *id.*

¹⁵⁷ See *id.*

¹⁵⁸ See Leader, *supra* note 2.

¹⁵⁹ See Westing, *supra* note 1, at 645.

¹⁶⁰ See *id.*

¹⁶¹ See Tom Knudson & Nancy Vogel, *Aging Dams, Already Under Siege, Face New Pressures*, THE SACRAMENTO BEE, Nov. 25, 1997, at A1.

¹⁶² See Adrienne Flynn, *Protecting Dams Drains Agency Fund*, THE ARIZONA REPUBLIC, Mar. 28, 1997, at A1.

¹⁶³ See Westing, *supra* note 1, at 651.

¹⁶⁴ See *id.*

tween Nevada and Arizona, for example, prevents 9.2 trillion gallons of water from inundating thousands of acres of land in both states.¹⁶²

As with other forms of environmental terrorism, the use of water as a weapon originated on the field of battle.¹⁶³ Throughout history, military commanders have sought to utilize the power of water in times of war.¹⁶⁴ The single most destructive act, in terms of lives lost, in the history of warfare resulted from the destruction of a dike by the Chinese army during World War II.¹⁶⁵

In June of 1938, in order to stem the advance of Japanese invaders, the Chinese army dynamited the Huayuankow dike on the Yellow River.¹⁶⁶ Although the ensuing flood succeeded in stopping the Japanese advance, the consequences were devastating.¹⁶⁷ The flood destroyed eleven Chinese cities and more than 4000 villages.¹⁶⁸ Several hundred thousand Chinese drowned and several million more were left homeless.¹⁶⁹ Millions of acres of farmland were submerged, destroying both crops and irreplaceable topsoil.¹⁷⁰ The Yellow River was not brought back under control until 1947.¹⁷¹

During the Korean War, the United States pursued a deliberate strategy of dam destruction against North Korea.¹⁷² The target of this tactic was the environment itself.¹⁷³ As an agrarian society, Korea was dependent on the land.¹⁷⁴ Bombing the dams capitalized on this dependency by releasing valuable agricultural water supplies, destroying farmland, and disrupting the supply of rice to both citizens and soldiers.¹⁷⁵

The appeal of dams as a target for terrorist activity is obvious—a minimal amount of effort results in massive long-term environmental destruction.¹⁷⁶ During World War II, British commanders described

¹⁶⁵ See *id.*

¹⁶⁶ See *id.*

¹⁶⁷ See *id.*

¹⁶⁸ See Westing, *supra* note 1, at 651.

¹⁶⁹ See *id.*

¹⁷⁰ See *id.*

¹⁷¹ See *id.*

¹⁷² See LANIER-GRAHAM, *supra* note 91, at 30.

¹⁷³ See *id.*

¹⁷⁴ See *id.*

¹⁷⁵ See *id.*

¹⁷⁶ See Westing, *supra* note 1, at 652.

¹⁷⁷ *Id.*

¹⁷⁸ Wire Reports, *Grand Coulee Dam Security Beefed Up to Thwart Terrorists*, THE FORT WORTH STAR-TELEGRAM, May 24, 1997, at 4.

dam destruction as a means of achieving "maximum effect with minimum effort."¹⁷⁷ The federal Office of Managing Risk and Public Safety has determined that an explosive placed at a major American dam could cause "catastrophic" destruction downstream.¹⁷⁸

Federal officials have expressed concern that dams in the United States could become the targets of a terrorist attack.¹⁷⁹ One Commissioner of the Bureau of Reclamation, which manages the 475 federal dams, has stated that "we're recognizing the potential violence that's out there."¹⁸⁰ In a report to the agency, an independent panel of the Association of State Dam Safety Officials found that "the vulnerability to sabotage and terrorism at many facilities is very high."¹⁸¹

As history illustrates, the environmental devastation that can be caused by breaching levees, dikes, or dams is enormous.¹⁸² Experts predict, for example, that if the Glen Canyon Dam collapsed, Lake Powell—the second largest reservoir in America—would re-sculpt the Grand Canyon.¹⁸³

4. Targeting the Biosphere

Humans could not survive without the diverse ecosystems that make up the Earth's biosphere.¹⁸⁴ The harvesting of crops, forests, and other renewable resources sustain life as we know it.¹⁸⁵ These ecosystems can be attacked by terrorists in a number of ways, including: (1) application of poisons; (2) introduction of exotic living organisms; and (3) incendiary means.¹⁸⁶

Once again, terrorists need only look to the history of war for instruction in tactics of this type.¹⁸⁷ During the Vietnam War, the United States eradicated vast areas of jungle with various herbicides.¹⁸⁸ In the Anglo-Boer War of 1899–1902, the Boers set fire to

¹⁷⁹ See H. Josef Hebert, *Dam Security Being Strengthened as Threat of Terrorism Becomes Issue*, THE COLUMBIAN, Mar. 28, 1997, available in 1997 WL 6518781.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² See Westing, *supra* note 1, at 651.

¹⁸³ See Knudson, *supra* note 161, at 194.

¹⁸⁴ See Westing, *supra* note 1, at 654.

¹⁸⁵ See *id.*

¹⁸⁶ See *id.*

¹⁸⁷ See *id.* at 655.

¹⁸⁸ See *id.*

¹⁸⁹ See Westing, *supra* note 1, at 655.

¹⁹⁰ See *id.*

¹⁹¹ See *id.*

wide expanses of forest in order to deny both cover and sustenance to the advancing British.¹⁸⁹

Killing the horticulture of an ecosystem—whether by herbicides, fire, or other means—can cause substantial damage to that system's wildlife and topsoil.¹⁹⁰ Recovery from such ecological damage could take decades.¹⁹¹

D. *Existing Domestic Legal Doctrines*

There is currently no law which specifically addresses the issue of environmental terrorism.¹⁹² The two most applicable legal doctrines, terrorism law and the law of environmental protection, fail to adequately address the practical issues associated with this emerging threat. Understanding these traditional legal doctrines is, however, a prerequisite to developing a new law specifically designed to prosecute and punish acts of environmental terrorism.¹⁹³

1. Terrorism Law

The United States government operates on the principle that terrorists are common criminals.¹⁹⁴ This strategy of treating terrorists as common criminals—persons engaged in crime for purely personal reasons—is designed to delegitimize the terrorist act.¹⁹⁵ By ignoring the political nature of the crime, prosecutors frustrate terrorists' desire for publicity while avoiding the impression that a serious terrorism problem exists.¹⁹⁶

Consistent with traditional law enforcement strategies, the focus of anti-terrorism activity is on apprehension and punishment.¹⁹⁷ Prosecutors operating within this "terrorist as criminal" paradigm rely upon traditional criminal law in bringing terrorists to justice.¹⁹⁸ Terrorists are indicted for each crime committed in furtherance of the

¹⁹² See generally BRENT SMITH, *supra* note 4; Schafer, *supra* note 4.

¹⁹³ See Louis Rene Beres, *The Meaning of Terrorism—Jurisprudential and Definitional Clarifications*, 28 VAND. J. TRANSNAT'L L. 239, 239–40 (1995); Ludwick A. Teclaff, *Beyond Restoration—The Case of Ecocide*, 34 NAT. RESOURCES J. 933, 954 (Fall 1994).

¹⁹⁴ See Roberta Smith, *supra* note 18, at 254.

¹⁹⁵ See *id.*

¹⁹⁶ See BRENT SMITH, *supra* note 4, at 155.

¹⁹⁷ See *id.*

¹⁹⁸ See *id.* at 161.

¹⁹⁹ See *id.*

²⁰⁰ See Spencer J. Crona & Neal A. Richardson, *Justice for War Criminals of Invisible*

subsequent act of terror rather than with terrorism in its own right.¹⁹⁹ These charges usually focus on the mode of transportation, type of commerce attacked, or the particular weapon used, such as explosives.²⁰⁰ Prosecution of common law crimes such as murder, assault, and conspiracy are essential elements of the case against the terrorist.²⁰¹ Terrorists often unwittingly aid prosecutors in implementing this strategy by engaging in a wide range of criminal conduct leading up to the incident of terrorism.²⁰²

Terrorism qua terrorism did not constitute a federal crime in the United States until passage of the Anti-Terrorism and Effective Death Penalty Act of 1996.²⁰³ The Anti-Terrorism and Effective Death Penalty Act was passed in the wake of the Oklahoma City bombing to provide the federal government with additional tools in the war against terrorism.²⁰⁴ Specifically, the Act makes it a federal crime to commit an act of international terrorism in the United States.²⁰⁵

In addition to criminalizing terrorism, the Anti-Terrorism law also includes provisions that: (1) forbid fund-raising in the United States by foreign groups identified by the Secretary of State as engaged in terrorist activity; (2) require that plastic explosives contain chemical taggants to make it easier for law enforcement to track their source; and (3) criminalize the use of chemical weapons in the United States or against American citizens abroad.²⁰⁶

This final provision, criminalizing the use of chemical weapons, mirrors provisions found in the Biological Weapons Act of 1989.²⁰⁷ Congress passed the Biological Weapons Act to implement portions of the Biological Weapons and Toxins Convention of 1972 and to combat acts of bioterrorism.²⁰⁸ The key provision of the Act defines as a federal crime the "knowing development, manufacture, transfer, or possession of any biological agent, toxin or delivery system."²⁰⁹

Armies: A New Legal and Military Approach to Terrorism, 21 OKLA. CITY U. L. REV. 349, 355 (Summer/Fall 1996).

²⁰¹ See *id.* at 354.

²⁰² See BRENT SMITH, *supra* note 4, at 161.

²⁰³ See 28 U.S.C. §§ 2241-2266 (1994 & Supp. III 1997); Roberta Smith, *supra* note 18, at 266.

²⁰⁴ See Roberta Smith, *supra* note 18, at 268.

²⁰⁵ See 28 U.S.C. § 2244.

²⁰⁶ See *id.* §§ 2241-2266.

²⁰⁷ See Ferguson, *supra* note 93, at 357.

²⁰⁸ See *id.*

²⁰⁹ See 18 U.S.C. § 175 (1994).

²¹⁰ See BRENT SMITH, *supra* note 4, at 161.

²¹¹ See *id.*

The Anti-Terrorism and Biological Weapons Acts are examples of laws designed to confront emerging terrorist threats within the context of the "terrorist as criminal" paradigm.²¹⁰ Consistent with traditional domestic approaches to terrorist activity, these laws focus on the apprehension and punishment of "criminals" and provide prosecutors with additional weapons in their indictment arsenals.²¹¹

2. The Law of Environmental Protection

The United States is one of the world leaders in the area of environmental protection.²¹² Federal statutes aimed at protecting the environment have been a part of American law since the nineteenth century.²¹³

Environmental protection expanded dramatically with the enactment of numerous federal statutes in the 1970s including the Clean Air Act Amendments and the Safe Drinking Water Act.²¹⁴ This collection of laws was designed to create a comprehensive regulatory system to control pollution and protect the purity of America's air, water, and soil.²¹⁵ Those statutes dealing with pollution control and environmental protection are to be administered by the Environmental Protection Agency (EPA), while those that deal more directly with protection of wildlife and other natural resources are administered by the various subdivisions of the Department of the Interior.²¹⁶ These regulatory agencies enforce the environmental protection laws through a variety of means, including civil and criminal sanctions.²¹⁷

Most of the major environmental laws in the United States contain criminal penalties for violation of their provisions.²¹⁸ Transporting or disposing of hazardous waste without proper documentation, for example, is a criminal offense under the Resource Conservation and Recovery Act (RCRA).²¹⁹ Violations of such criminal provisions are

²¹² See Schafer, *supra* note 4, at 295.

²¹³ See SUSAN F. MANDIBERG & SUSAN L. SMITH, CRIMES AGAINST THE ENVIRONMENT 8 (1997).

²¹⁴ See *id.*

²¹⁵ See Schafer, *supra* note 4, at 295.

²¹⁶ See MANDIBERG & SMITH, *supra* note 213, at 10.

²¹⁷ See *id.* at 12.

²¹⁸ See FRONA M. POWELL, LAW AND THE ENVIRONMENT 365 (1997).

²¹⁹ See 42 U.S.C. §§ 6901-6992(k) (1994).

²²⁰ See MANDIBERG & SMITH, *supra* note 213, at 10.

referred by the respective agencies to the Department of Justice (DOJ) for criminal prosecution.²²⁰

Until relatively recently, however, criminal prosecution for violations of environmental laws were rare.²²¹ Only twenty-five criminal environmental cases were prosecuted by the DOJ in the 1970s.²²² In 1982 the EPA referred only twenty criminal environmental cases to the DOJ. By 1990, however, the number had increased to sixty-five referrals resulting in 134 indictments.²²³

This increase in criminal prosecution of corporate polluters can be attributed to several factors, including the failure of civil sanctions to deter the illegal conduct of corporations.²²⁴ "In most instances, profit incentives associated with environmental crime outweigh the statutory penalties."²²⁵ Corporations viewed the sanctions as a cost of doing business and in most instances simply passed that cost on to the consumer.²²⁶

Criminal sanctions do not suffer from these same limitations.²²⁷ Prosecutors believe that bad publicity, stigma, and loss of goodwill associated with criminal prosecution deter both corporations and their officers from violating laws of environmental protection.²²⁸ Moreover, many environmental statutes authorize the imprisonment of corporate officers and employees in their personal capacities.²²⁹

The Pollution Prosecution Act of 1990 expanded the ability of prosecutors to criminally prosecute those who violate the laws of environmental protection.²³⁰ This law quadrupled the number of investigators assigned to the EPA, increased the technical support available to investigators, and established a national training center to help enforcement officials comprehend the notoriously technical environmental statutes.²³¹

²²¹ See Richard J. Lazarus, *Assimilating Environmental Protection Into Legal Rules and the Problem with Environmental Crime*, 27 LOYOLA L.A. L. REV. 867, 868 (1994).

²²² See Robert Deeb, *Environmental Criminal Liability*, 2 S.C. ENVTL. L.J. 159, 162 (1993).

²²³ See *id.*

²²⁴ See Steven L. Humphreys, *An Enemy of the People: Prosecuting the Corporate Polluter as a Common Law Criminal*, 39 AM. U. L. REV. 311, 326-27 (1990).

²²⁵ *Id.*

²²⁶ See Lazarus, *supra* note 221, at 880.

²²⁷ See Edward F. Novak & Charles W. Steese, *Survey of Federal and State Environmental Crime Legislation*, 34 ARIZ. L. REV. 571, 573 (1992).

²²⁸ See *id.*

²²⁹ See Lazarus, *supra* note 221, at 880.

²³⁰ See 42 U.S.C. § 4321 (1994); Deeb, *supra* note 222, at 163.

²³¹ See 42 U.S.C. § 4321; Deeb, *supra* note 222, at 163-64.

The initial impetus for the criminalization of environmental law and an important factor contributing to increased enforcement efforts has been the emergence of environmental consciousness in America.²³² Over the last three decades, organizations dedicated to the environment have created tremendous public awareness about the threatened environment.²³³ The populace at large now views environmental offenses as more akin to traditional crimes rather than mere regulatory violations. A Department of Justice poll of public attitudes on crime ranked unlawful environmental activities between violent crimes such as murder and rape, and other white collar crimes such as public corruption.²³⁴

Several commentators have suggested that postindustrial values emphasizing environmental protection over natural resource exploitation represent part of a new world view which they label a "New Environmental Paradigm."²³⁵

A brief examination of international law appears to support the global nature of this trend. The international community has increasingly recognized the need for environmental protection and international law has developed accordingly.²³⁶

Initially, international environmental law took the form of issue-specific treaties.²³⁷ One of the first treaties to deal with environmental protection was the Antarctic Treaty of 1959.²³⁸ It prohibits nuclear wastes and explosions from the Antarctic while designating the continent as a place of scientific research, to be used only for peaceful purposes.²³⁹ Similarly, the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter specifically protects the oceans by controlling the amount and character of wastes dumped into them.²⁴⁰

The international approach to environmental protection began to change, however, with the United Nations Conference on the Human

²³² See Gerhard O. W. Mueller, *An Essay on Environmental Criminality in ENVIRONMENTAL CRIME AND CRIMINALITY 4* (Sally M. Edwards et al. eds., 1996).

²³³ See *id.* at 8.

²³⁴ See Humphreys, *supra* note 224, at 313.

²³⁵ Susan Hedman, *Expressive Function of Criminal Sanctions in Environmental Law*, 59 GEO. WASH. L. REV. 889, 890 (1991).

²³⁶ See Lynn Berat, *Defending the Right to a Healthy Environment: Toward a Crime of Geocide in International Law*, 11 B.U. INT'L L.J. 327, 330 (1993).

²³⁷ See Schafer, *supra* note 4, at 289.

²³⁸ See *id.*

²³⁹ See *id.*

²⁴⁰ See *id.*

Environment held in Stockholm in 1972.²⁴¹ The Stockholm Conference, as it is commonly known, established the United Nations Environmental Program (UNEP) to foster environmental action.²⁴² The Conference also issued a Declaration which articulated non-binding principles focusing on the environment.²⁴³ Principle I of the Declaration indicates that humans have a "fundamental right to freedom, equality, and adequate conditions of life, in an environment of quality that permits a life of dignity and well-being, and [they] bear a solemn responsibility to protect and improve the environment for present and future generations."²⁴⁴

Some legal commentators contend that this Declaration, along with the practice of states and international tribunals, supports the proposition that the right to a healthy environment has passed into the corpus of customary international law.²⁴⁵ Customary international law is defined as a general practice among nations carried out in such a way as to be evidence of a belief that the practice is rendered obligatory by the existence of a rule of law requiring it.²⁴⁶

The commentators who contend that the right to a healthy environment has been accepted as a norm of customary international law assert that violations of the principle should be punished under an international crime of ecocide.²⁴⁷

The term "ecocide" was first coined to categorize massive destruction of the environment in war, specifically the use of defoliants by the United States in Southeast Asia.²⁴⁸ Ecocide is generally defined as the intentional destruction, in whole or in part, of any portion of the global ecosystem.²⁴⁹

Ecocide advocates contend that the basic human right to a healthy environment is meaningless unless the law provides criminal reme-

²⁴¹ See Berat, *supra* note 236, at 330.

²⁴² See *id.*

²⁴³ One hundred and thirteen countries adopted the declaration which contained 26 principles relating to the protection and enhancement of the world environment. See Schafer, *supra* note 4, at 291.

²⁴⁴ Berat, *supra* note 236, at 331.

²⁴⁵ See Berat, *supra* note 236, at 341-43; Gray, *supra* note 6, at 216; Teclaff, *supra* note 193, at 952.

²⁴⁶ RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102(2) (1987).

²⁴⁷ See Gray, *supra* note 6, at 216; Teclaff, *supra* note 193, at 952; Berat, *supra* note 236, at 341-43.

²⁴⁸ Teclaff, *supra* note 193, at 933.

²⁴⁹ See Berat, *supra* note 236, at 343.

dies for its breach.²⁵⁰ They point to substantial precedent for such remedies in conventional international law.²⁵¹ The 1911 Convention for the Preservation of Fur Seals in the North Pacific, the 1954 International Convention for the Prevention of Pollution of the Sea by Oil, and the 1973 International Convention for the Prevention of Pollution from Ships, for example, all include penal provisions.²⁵²

Despite the advocacy of commentators, however, and the ostensible support of international authority, ecocide is not currently recognized as an international crime.²⁵³ This is because many states dispute the contention that the right to a healthy environment, which provides the primary legal rationale for the crime of ecocide, has risen to the level of customary international law.²⁵⁴

II. ANALYSIS

A. *Inefficacy of Existing Legal Doctrines*

The legal mechanisms discussed above fail to adequately respond to the specific threat of environmental terrorism for two reasons: (1) criminal prosecution of environmental terrorists under complex environmental statutes is not consistent with the paradigm of treating terrorists as common criminals; and (2) existing doctrines do not adequately accomplish the expressive function of criminal law.

1. Inapplicability of Existing Statutes

Existing environmental protection statutes were not intended to govern the type of malicious environmental destruction perpetrated by terrorists.²⁵⁵ The vast regulatory schemes created by statutes such as the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) are designed to deter corporate pollution, not environmental terrorism.²⁵⁶ In fact, of the 134 indictments arising from the sixty-five referrals to DOJ in 1990, ninety-

²⁵⁰ See *id.* at 340.

²⁵¹ See *id.* at 341.

²⁵² See *id.*

²⁵³ See Gray, *supra* note 6, at 266.

²⁵⁴ See Berat, *supra* note 236, at 347.

²⁵⁵ See Powell, *supra* note 218, at 365-67.

²⁵⁶ See *id.*

eight percent named corporations, presidents, owners, vice presidents, directors, and managers as defendants.²⁵⁷

Prosecuting environmental terrorists under environmental protection statutes is also not consistent with the paradigm of treating terrorists as common criminals.²⁵⁸ As discussed previously, acts of terrorism have traditionally been prosecuted by means of the component crimes.²⁵⁹ Complex statutory schemes such as those found in many environmental statutes do not readily adapt to this "terrorist as criminal" paradigm.²⁶⁰ Such statutes, while armed with criminal provisions, treat violations more like regulatory offenses than common law crimes.²⁶¹ Moreover, the standards of liability, evidence, and proof that are well established under traditional criminal statutes are less clear under these environmental regulation schemes.²⁶²

Environmental protection statutes also complicate the prosecution of environmental terrorists by forcing prosecutors to navigate in unfamiliar territory.²⁶³ Environmental law is notoriously technical and complex and few prosecutors have extensive experience in this area.²⁶⁴ EPA's regulations alone, without explanatory preambles and agency guidance, total over 10,000 pages in the Code of Federal Regulations—and they are constantly changing.²⁶⁵ These regulatory schemes are so complex that environmental regulators, consultants, and lawyers regularly specialize in one or two specific regulations.²⁶⁶

Prosecutors faced with the complexity of environmental protection statutes are likely to avoid them altogether and instead rely solely on more manageable criminal statutes in bringing environmental terrorists to justice. This practice fails to reflect societal values. The criminal law is not merely a mechanical device serving the needs of prosecutors. The criminal law is expressive of societal ethics—it gives force and symbolic representation to moral values by conveying condemna-

²⁵⁷ See Dick Thornburgh, *Criminal Enforcement of Environmental Laws—A National Priority*, 59 GEO. WASH. L. REV. 775, 778 (1991).

²⁵⁸ See BRENT SMITH, *supra* note 4, at 161.

²⁵⁹ See *id.*

²⁶⁰ See Roberta Smith, *supra* note 18, at 254–55.

²⁶¹ See Humphreys, *supra* note 224, at 326–27.

²⁶² See Kevin A. Gaynor et al., *Environmental Criminal Prosecutions: Simple Fixes for a Flawed System*, 3 VILL. ENVTL. L.J. 1, 5 (1992).

²⁶³ See *id.* at 8.

²⁶⁴ See *id.*

²⁶⁵ See *id.*

²⁶⁶ See *id.* at 5.

tion and disgrace.²⁶⁷ Failing to prosecute the environmental elements of a terrorist act undermines this expressive function of the criminal law.

2. Failure to Satisfy the Expressive Function of Criminal Law

The purpose of criminal law is "to conserve not only the safety and order, but also the moral welfare of the state."²⁶⁸ Failure to prosecute terrorists for the environmental components of their crimes fails to accomplish this purpose.

Criminal laws emerge for a variety of reasons: [To] protect the interests of the state; to deter, suppress, and punish undesirable activities; to provide order, security, and justice among members of a community; and to give force and symbolic representation to the moral values, beliefs, and prejudices of those who make the laws.²⁶⁹

A crime is a public wrong which threatens fundamental social values.²⁷⁰ Both the law and society identify an element of moral outrage on the part of the community against the criminals because they have done something "wrong."²⁷¹

As discussed previously, the populace at large regards offenses against the environment as serious criminal conduct.²⁷² "Environmental protection [is] viewed by many as being as important to our collective well-being as national security, economic prosperity, social justice and even democracy itself."²⁷³

Prosecuting environmental terrorists under the same regulatory statutes as corporate polluters does not adequately reflect this position. Environmental protection statutes provide criminal sanctions for regulatory offenses, but they do not satisfy the expressive function of the criminal law. These provisions do not provide adequate force and symbolic representation to society's condemnation of deliberate environmental destruction. Prosecuting environmental terrorists under these statutes, therefore, undermines society's expressed desire

²⁶⁷ See Hedman, *supra* note 235, at 896.

²⁶⁸ Gray, *supra* note 6, at 259.

²⁶⁹ Nadelmann, *Global Prohibition Regimes: The Evolution of Norms in International Society*, 44 INT'L ORG. 479, 482 (1990).

²⁷⁰ See Gray, *supra* note 6, at 259.

²⁷¹ See *id.*

²⁷² See Mueller, *supra* note 232, at 4.

²⁷³ Hedman, *supra* note 235, at 897.

to punish acts of environmental crime. Environmental terrorism is condemned by society, but not adequately punished by law.

B. *Proposed Legal Mechanism: The Criminalization of Environmental Terrorism*

Acts of environmental terrorism should be recognized for what they are—crimes against the environment. Criminalizing environmental terrorism as acts of “ecocide” codifies societal outrage at such behavior while enabling law enforcement officials to operate within the “terrorist as criminal” paradigm.

The proposed international law of ecocide provides the model for a domestic statute.²⁷⁴ International ecocide is identified on the basis of the deliberate or negligent violation of international custom.²⁷⁵ Domestic ecocide should be based on the deliberate or reckless violation of a specific criminal statute prohibiting such conduct.

The domestic crime of ecocide should be defined as the intentional or reckless manipulation or destruction of any aspect of the physical environment which damages or exploits, in whole or in part, any portion of the global ecosystem.²⁷⁶ This definition incorporates not only acts which destroy the environment, but also those which employ it as a conduit of destruction.

Acts performed with knowledge of or reckless disregard for the immediate or long-term effects on global ecosystems should be punished as acts of ecocide.²⁷⁷ Causation would be established from the harm to the ecosystem affected or from evidence that the environment was used as a conduit for an act of terror.

A statutory crime of ecocide enables law enforcement officials to combat environmental terrorism within the context of the “terrorist as criminal” paradigm.²⁷⁸ Environmental terrorists could be apprehended and punished as common criminals.²⁷⁹ Prosecutions for ecocide would resemble those of other common crimes—enabling prosecutors to avoid the morass of complex environmental protection statutes. Punishment could also be more severe than that found in regulatory environmental protection statutes.²⁸⁰

²⁷⁴ See Gray, *supra* note 6, at 270–71.

²⁷⁵ See *id.* at 216.

²⁷⁶ See Berat, *supra* note 236, at 343.

²⁷⁷ See Powell, *supra* note 218, at 367.

²⁷⁸ See Roberta Smith, *supra* note 4, at 254.

²⁷⁹ See *id.*

²⁸⁰ See Humphreys, *supra* note 224, at 313.

Ecocide would not supplant prosecution for the component crimes of an act of environmental terrorism, but it would provide prosecutors with another weapon in their indictment arsenal—a weapon which expressly condemns the environmental nature of the crime.

A mock application of this law may provide a better understanding of its practical and expressive benefits. As discussed previously, in 1985 a drum containing thirty-five gallons of cyanide was discovered in the compound of the right-wing group the Covenant, Sword and Arm of the Lord.²⁸¹ The cyanide was to be used to poison the water supply of Washington, D.C. or New York City.²⁸² For purposes of demonstration, let's assume that the terrorists succeeded in their plan. The cyanide attack on the New York water supply caused thousands to become sick, interrupted water service in the city for days, and had long-term impacts on both plant and animal ecosystems.

This act of environmental terrorism could be punished as a crime of ecocide because it involved the intentional manipulation of the physical environment that exploited or damaged parts of the global ecosystem. The act was also performed with the knowledge or reckless disregard for its immediate or long-term effects on the global ecosystem. The causal link would be established by proving that the poisoning of the water exploited or damaged any aspect of the global ecosystem.

The prosecution in the case could still indict the terrorists for common law crimes such as attempted murder or assault or for violations of environmental protection statutes, but a crime of ecocide provides a better option. An option that is free from the burdens associated with complex environmental protection statutes and an option that reflects society's outrage at the environmental aspects of the crime.

CONCLUSION

The criminalization of ecocide provides force and symbolic representation to society's condemnation of deliberate environmental destruction. Acts of ecocide are treated as traditional crimes rather than mere regulatory violations.²⁸³ This not only provides practical advantages for prosecutors, it is also more reflective of public attitudes which now consider offenses against the environment as a serious

²⁸¹ See Leader, *supra* note 2.

²⁸² See *id.*

crime.²⁸⁴ Although it is unlikely that criminalizing acts of ecocide will deter the actions of environmental terrorists, doing so serves both the practical requirements of the terrorism as crime paradigm and the expressive function of the criminal law.

²⁸³ See Humphreys, *supra* note 224, at 313.

²⁸⁴ See Mueller, *supra* note 232, at 4.