

Anatomy of a Tragedy: Agent Orange during the Vietnam War.

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## **ABSTRACT.**

The U.S. Air Force used a variety of herbicides, colloquially referred to as Agent Orange, from 1961 to 1975 in South Vietnam, Laos, and Cambodia in order to disrupt enemy bases, increase aerial visibility, destroy the food supply, and push civilians into U.S.-GVN controlled areas. Agent Orange had immediate environmental effects, but more significantly, created long-term health problems for the Vietnamese people. Efforts to address the health and environmental effects of Agent Orange are of crucial importance in Vietnam, where up to three million citizens suffer from diseases and conditions associated with exposure to Agent Orange during the Vietnam War.

My research explores how legal and scientific modes of representation failed to address damages done to the Vietnamese population and environment. During a period of increasing environmental activism and the Nixon administration's implementation of domestic environmental protection legislation, the use of Agent Orange in Vietnam provoked critical debates on the legal and scientific status of environmental warfare. The experience of Agent Orange during the Vietnam War demonstrates how political circumstances influenced the negotiation of scientific and legal uncertainty. Without a comprehensive understanding of the environmental and health effects of Agent Orange in Vietnam, the U.S. government continues to promote the military use of herbicides in drug crop eradication programs in Central and South America.

## **ACKNOWLEDGMENTS.**

My interest in Agent Orange emerged from a project examining how counterinsurgency worked on the village level in Professor Anders Stephanson's seminar Problems in International History during the spring semester of 2011. Over the summer, I began my research as part of the Hertog Global Initiative led by Professor Matthew Connelly. Conversations with my fellow Hertog participants were helpful in orienting the direction of my research. I also appreciate the suggestions and edits from my classmates in Professor Foner's seminar thesis seminar.

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Most of all, I thank my parents for always encouraging my academic interests and helping me be the person I am today.

## **INTRODUCTION.**

In his opening address at the first-ever joint U.S.-Vietnamese scientific conference on Agent Orange in 2002, U.S. Ambassador Raymond Burghardt commended the deepening diplomatic and economic relationship between the United States and Vietnam, yet admitted that "the one significant ghost remaining that we seek to confront is the issue of Agent Orange and dioxin."<sup>1</sup> Indeed, efforts to address the health and environmental effects of Agent Orange are of crucial importance in Vietnam, where up to three million citizens suffer from diseases and conditions associated with exposure to Agent Orange during the Vietnam War.

The U.S. Air Force used a variety of herbicides, colloquially referred to as Agent Orange, from 1961 to 1975 in South Vietnam, Laos, and Cambodia in order to disrupt enemy bases, increase aerial visibility, destroy the food supply, and push civilians into U.S.-GVN controlled areas. Agent Orange had immediate environmental effects, but more significantly, created long-term health problems for the Vietnamese people and U.S. veterans.

Agent Orange contained dioxin, which enters human tissue through direct contact with the skin, inhalation through the lungs, and the food and water supply, acting directly on mitochondrial transcription processes to regulate growth and cell development.<sup>2</sup> The WHO included dioxin as a carcinogen in 1997, followed by the EPA's findings in 2000 that dioxins have the potential for widespread human health

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<sup>1</sup> "Conference tackles 'ghost' of Vietnam war," USA Today, Associated Press. March 2, 2002. [www.usatoday.com/news/world/2002/03/03/orange.htm](http://www.usatoday.com/news/world/2002/03/03/orange.htm).

<sup>2</sup> M. Nathaniel Mead, "Chemical Exposures, Cancer, and TCDD: The Mitochondrial Connection," *Environmental Health Perspectives* 116, no. 3 (March 2008): A112.

effects.<sup>3</sup> Dr. Arnold Schecter, a scientist who conducts research in South Vietnam, argues that dioxin can remain in human blood for over 35 years. In 2003, he found that dioxin levels in the soil near former U.S. bases was 180 million times the limit set by the EPA.<sup>4</sup> Up to a quarter of the dioxin released in the Vietnam War remains in the Vietnamese environment.<sup>5</sup>

Jeanne and Steve Stellman's re-evaluation of U.S. Air Force herbicide mission records in 2003 transformed prior understandings of the use of Agent Orange in Vietnam. By examining long overlooked military records and correlating geographic coordinates of U.S. Air Force sorties with population data from the Hamlet Evaluation Survey, they concluded that a higher volume of herbicides with a higher dioxin content were used, often in populated areas. Their study noted that between 2.1 and 4.8 million Vietnamese citizens could have been exposed to dioxin during the course of the Vietnam War.<sup>6</sup> Although the United States has recognized the long-term health problems associated with exposure to chemical agents through benefit programs for U.S. veterans, groups representing the Vietnamese population have repeatedly lost legal attempts to hold the U.S. government and companies that manufactured Agent Orange accountable.<sup>7</sup>

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<sup>3</sup> Environmental Protection Agency, "Information Sheet: Summary of the Dioxin Reassessment Science," Washington, D.C.: Office of Research and Development (May 2001).

<sup>4</sup> Dr. Arnold Schecter et al., "Food as a source of dioxin exposure in the residents of Bien Hoa City, Vietnam," *Journal of Occupational and Environmental Medicine* 45 (2003): 781-788.

<sup>5</sup> World Health Organization, "Fact Sheet 225: Dioxins and their effects on human health," May 2010, <http://www.who.int/mediacentre/factsheets/fs225/en/>; Susan M. Booker, "Dioxin in Vietnam: Fighting a Legacy of War," *Environmental Health Perspectives* 109, no. 3 (March 2001): A116.

<sup>6</sup> Jeanne Mager Stellman, Steven D. Stellman, Richard Christian, et al. "The Extent and Patterns of Usage of Agent Orange and Other Herbicides in Vietnam." *Nature* 422 (2003): 681-87.

<sup>7</sup> The U.S. Veteran's Administration compensates Vietnam and Korean veterans for the following dioxin-related health effects: peripheral neuropathy, amyloidosis, chlorance, chronic B-cell leukemia, type 2 diabetes, Hodgkin's disease, multiple myeloma, non-Hodgkin's lymphoma, Parkinson's disease,

The use of herbicides in Vietnam is intimately connected to President John F. Kennedy's attempt to pursue a policy counterinsurgency against "wars of national liberation." Stemming from Mao Zedong and Che Guevara's treatises on guerilla warfare that emphasized the necessity of winning the support of the rural population, counterinsurgent strategy sought to separate guerillas from the general population through the creation of strategic hamlets, the defoliation of NLF-controlled territories, and the destruction of rice crops. Herbicides were also used to engage the NLF and increase the effectiveness of direct fire weapons through greater visibility.<sup>8</sup>

The effects of Agent Orange on Vietnamese civilians and society have often been relegated to the periphery of the historical debate on the use of the herbicide Agent Orange. Military histories have centered on Operation Ranch Hand, the Air Force mission from 1961 to 1971 that was primarily responsible for the defoliation of forests and crop destruction. William A. Buckingham's official Air Force history of Operation Ranch Hand argues that Agent Orange they saved American lives by reducing the territorial security and food supply of the NLF.<sup>9</sup> Similarly, Paul Cecil, a former U.S. Air Force pilot that participated in Operation Ranch Hand, argues that the use of herbicides optimized combat conditions to assist U.S. Army ground operations.<sup>10</sup>

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porphyria cutanea tarda, prostate cancer, respiratory cancers, soft tissue sarcoma, and spina bifida. See U.S. Department of Veteran Affairs, "Agent Orange: Diseases Related to Agent orange Exposure," <http://www.publichealth.va.gov/exposures/agentorange/diseases.asp>, Last updated November 17, 2011.

<sup>8</sup> Ronald Spiers (Chairman of NSC IMPG) to President Nixon, "NSSM 112: U.S. Post Vietnam Policy on Use of Riot Control Agents and Herbicides in War, December 1, 1971," *Digital National Security Archive*, Item #: PR00694.

<sup>9</sup> William A. Buckingham, *Operation Ranch Hand: The Air Force and Herbicides in Southeast Asia, 1961-1971* (Washington, D.C.: Office of Air Force History, United States Air Force, 1982).

<sup>10</sup> Paul Frederick Cecil, *Herbicide Warfare: The Ranch Hand Project in Vietnam* (New York: Praeger, 1986).

The scholarship on the long-term health effects of Agent Orange has focused on the experience of U.S. veterans.<sup>11</sup> In 1984, a class action lawsuit filed by U.S. Vietnam veterans against the chemical manufacturers of Agent Orange resulted in a \$180 million settlement. While the 1980s saw attempts at deregulation of dioxin due to the chemical and agricultural industries extensive lobbying efforts, the Gulf War raised public awareness and contributed towards increased support for medical aid for veterans, culminating in the 1991 Agent Orange Act which compensated veterans for health conditions associated with exposure to Agent Orange during the Vietnam War.

Cultural and intellectual histories of the Vietnam War help reframe the analysis of herbicide operations by examining the strategic logic behind U.S. policy in Vietnam.

James Gibson traces the consequences of the U.S. military's mechanistic and technocratic tactics of "limited warfare." Gibson writes that the herbicide program was "a way of reorganizing nature to meet [war managers'] needs,"<sup>12</sup> arguing that the U.S. government assumed that control of physical territory could be equated with the GVN's political authority. Phuong-Lan corrects prior scholarship by investigating the relationship of human actors to the natural environment. She treats the natural environment as a strategic and political actor in the American military's "area denial" and "food denial" programs in South Vietnam.<sup>13</sup>

Most significant to my project is the work of David Zierler, who explains how scientists were able to end the use of herbicides in Vietnam. Zierler, a historian for the

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<sup>11</sup> See Peter H. Schuck, *Agent Orange on Trial: Mass Toxic Disasters in the Courts* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1986) and Fred Wilcox, *Waiting for an Army to Die: The Tragedy of Agent Orange* (New York: Vintage Books, 1983).

<sup>12</sup> James William Gibson, *The Perfect War: Technowar in Vietnam*. 1st ed. (Boston: Atlantic Monthly Press, 1986) p. 123.

<sup>13</sup> Bui Thi Phuong-Lan, "When the Forest Became the Enemy and the Legacy of American Herbicidal Warfare in Vietnam" (Ph.D. dissertation, Harvard University, 2003).

U.S. State Department, notes that congressional critiques of U.S. military action in Vietnam and Nixon's efforts at détente through nonproliferation agreements combined to make the use of herbicides a central issue in defining U.S. foreign policy. Zierler argues that increased social awareness of environmental pollution created fertile conditions for scientists to use their expertise to influence public policy.<sup>14</sup>

However, Zierler's contention that scientists were the primary drivers of policies to end the use of herbicides does not examine the contested status of scientific knowledge. Even forty years after the Vietnam War, the toxicity of dioxin is widely debated and there is no consensus regarding the health and environmental effects of exposure. In fact, the Nixon administration did not suspend the use of Agent Orange upon receiving scientific evidence of birth defects related to dioxin exposure. Nixon's suspension of Agent Orange came six months later, and only after results of the government-funded study were leaked to the press.

My research examines how legal and scientific modes of representation failed to address damages done to the Vietnamese population and environment. It addresses how environmental conditions and biological changes were understood, examining how legal and scientific pressures failed to produce an accurate picture of conditions in Vietnam.

Complicating the effort to bring public awareness to use of herbicides during the Vietnam War was the fact that media images of herbicide spraying did not include guns, bombs, or dead bodies. Technologically advanced weapons sever "the normal linkage

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<sup>14</sup> David Zierler, *The Invention of Ecocide: Agent Orange, Vietnam, and the Scientists Who Changed the Way We Think about the Environment* (Athens: University of Georgia Press, 2011).

between cause and effect,”<sup>15</sup> making it more difficult to perceive the consequences of military action.

The history of Agent Orange underscores the interdependence between society and the environment. The U.S. military’s use of Agent Orange in Vietnam incorporated a new concern into domestic and international political debates—the environment.<sup>16</sup> The establishment of international governmental institutions, regulatory mechanisms, and prohibitive conventions reflected the emergence of a contingent of activists, veterans, scientists, and lawyers that pressured political institutions to pay attention to environmental concerns. As environmental protection measures extended beyond immediate crises, the unique characteristics of chemical hazards—long-term persistence, bioaccumulation, and difficult detection—generated doubts about the extent to which human knowledge could account for and control complex chemical processes.<sup>17</sup>

The protection of the environment faces “considerable informational boundaries” when the harmful effects of past actions only become evident with the passage of time.<sup>18</sup> The passage of time creates even more uncertainty about the specific cause of purported environmental damage and the ability to isolate and trace the hazardous

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<sup>15</sup> George H. Aldrich, “The Laws of War on Land,” *American Journal of International Law* 24, no. 1 (January 2000): 49.

<sup>16</sup> It is important to note that defoliation and crop destruction operations were only one facet of the strategy to manipulate the South Vietnamese environment. The U.S. military also used Rome plows and napalm to alter the physical landscape, bombed dikes to cause widespread flooding, and experimented with rainmaking and cloud seeding operations. See Arthur Westing, ed. *Herbicides in War: The Long-term Ecological and Human Consequences* (London and Philadelphia: Taylor and Francis, 1984). On rainmaking and cloud seeding, see James R. Fleming, *Fixing the Sky: The Checkered History of Weather and Climate Control* (New York: Columbia UP, 2010): 179-182.

<sup>17</sup> Samuel Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (New York: Cambridge UP, 1987): 8-9.

<sup>18</sup> Richard J. Lazarus, *The Making of Environmental Law* (Chicago: University of Chicago Press, 2004): 6.

effects of a toxic contaminant. The effects of environmental damage on human health are even more difficult to discern because they must be indirectly extrapolated from non-human studies and epidemiological research.<sup>19</sup>

Current U.S. foreign and domestic herbicide policies are directly related to the use of herbicides in Vietnam. The experience of defoliation and crop destruction during the Vietnam War shows how political circumstances influence the negotiation of scientific and legal uncertainty. Although the particular circumstances leading towards the current use of toxic chemicals in marginalized communities have changed, the structural arrangements—namely, the military-industrial nexus, the reliance on technocratic assumptions, legalism—persist. Legal, diplomatic, and scientific restraints failed to convince government officials and military planners. Instead, public knowledge, international attention, and activist mobilization pressured the Nixon administration to end the herbicide program.

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<sup>19</sup> *Ibid.*, 21.

## **CHAPTER ONE: Herbicides before the Vietnam War.**

Once described as “combat crop dusting,”<sup>20</sup> the military use of herbicides developed out of the intersection between agricultural science and World War II military research. U.S. Army scientists developed herbicides for the purpose of destroying the food supply of isolated Japanese units stationed on islands in the Pacific.<sup>21</sup>

The U.S. military considered using herbicides in Korea with the escalation of the Cold War in the 1950s, but Eisenhower refused to authorize it.<sup>22</sup> Britain used herbicides against the insurgency in Malaya during the late 1940s and early 1950s, focusing primarily on crop destruction rather than defoliation.<sup>23</sup> During the Vietnam War, military officials often referred to the British precedent when questioned on the legality of herbicides operations.

The massive increase in federally funded scientific research during WWII greatly enlarged the productive capabilities and economic strength of the chemical manufacturing industry. After WWII, the chemical manufacturing industry played an essential role in adapting military research on herbicides to consumer products designed for civilian use. The exponential increase in civilian and commercial uses of

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<sup>20</sup> Interview with John Spey, conducted by Steve Maxner, October 4, 2000, John Spey Collection, The Vietnam Center and Virtual Archive, Texas Tech University, Item#: OH0067.

<sup>21</sup> Secretary of War Henry Stimson asked National Academy of Scientists to assess state of knowledge in fields of biological and chemical warfare in October 1941. This ‘War Bureau of Consultants’ became the forum through which the application of chemical herbicides for crop destruction was discussed. See David A. Butler, “Connections: The Early History of Scientific and Medical Research on ‘Agent Orange,’” *Journal of Law and Policy* (2005): 528-552.

<sup>22</sup> Jonathan Tucker, *War of Nerves: Chemical Warfare from World War I to Al-Qaeda* (New York: Anchor Books, 2007): 156.

<sup>23</sup> Britain solicited the help of U.S. Army researchers to design the most effective chemicals and dispersal methods, eventually using 2,4,5-T sprayed from helicopters. Britain also experimented with sodium trichloroacetate, trioxene, and CMU (known commercially as Monuron). See Sioh.

herbicides reflected the widespread trend where “the products of the war machine... suddenly became products of necessity in the post-war world.”<sup>24</sup>

In order to understand the role of the chemical manufacturing industry in herbicide operations and its stake in supplying the U.S. military, it is necessary to first examine its knowledge of the potential for long-lasting health and environmental consequences of extended exposure to herbicides. An explosion at a Monsanto factory in Nitro, West Virginia in 1949 alerted the chemical industry to the toxic effects of dioxin exposure.<sup>25</sup> Immediately after the explosion, employees developed chloracne, nausea, nosebleeds, and headaches. Studies on Nitro employees in the 1950s suggested that over 25% of employees had systematic and long-term illnesses resulting from their exposure to high levels of dioxin.<sup>26</sup>

By the late 1950s, chemical manufacturers learned how to use lower manufacturing temperatures to prevent the production of dioxin in herbicides. Dow contacted a German company, C.H. Boehringer Sohn, soliciting information on how it dealt with employee exposure to dioxin. Sohn offered its internal research on reducing the production of dioxin through the alteration of the herbicide manufacturing process.<sup>27</sup>

In the early 1960s, chemical companies framed scientific research on dioxin through the problem of employee exposure. An explosion at a Dow manufacturing plant

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<sup>24</sup> Robert Allen, *The Dioxin War: Truth and Lies about a Perfect Poison* (London: Pluto Press, 2004): 8.

<sup>25</sup> See William F. Ashe and Raymond Suskind, *Reports on Chloracne Cases, Monsanto Chemical Company, Nitro, WV* (October 1949 and April 1950), unpublished reports for Department of Environmental Health College of Medicine, University of Cincinnati. In 2004, over 5,000 residents in Nitro, West Virginia filed a class action lawsuit against Monsanto for over 50 years of exposure to dioxin from Monsanto’s herbicide production facility. In February 2012, Monsanto settled to lawsuit, agreeing to pay \$93 million for medical testings and environmental cleanup. See Kate White, “Monsanto vows \$93M to Nitro residents,” *Charlestown Gazette*, February 24, 2012, <http://www.wvgazette.com/News/201202230090?page=1>.

<sup>26</sup> Robert Allen, 16.

<sup>27</sup> *Ibid*, 18.

in Midland, Michigan in 1964 once again alerted Dow executives to the health risks of dioxin exposure. Dow Chemical initiated a study of the health effects of dioxin following the explosion in Midland, which concluded that exposure could cause internal organ damage and nervous system disorders in addition to the immediately visible symptom of chloracne.<sup>28</sup> In order to prevent future employee exposure, Dow Chemical bought technology to reduce the amount of dioxin produced by the manufacturing process from C.H. Boehringer Sohn.<sup>29</sup> It is intriguing that Dow solicited and purchased technology to reduce dioxin contamination when it and other herbicide producers continued to claim that herbicides did not harm human health.

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<sup>28</sup> Casten, 659.

<sup>29</sup> Letter from Walter B. Trapp (Benzene Research Laboratory) to Peter Koopmann (Manager Bio-Products Sales), April 1, 1965, Item #: 6230110002, Admiral Elmo R. Zumwalt, Jr. Collection: General Subject Files, The Vietnam Center and Archive, Texas Tech University.

## **CHAPTER TWO: Operation Ranch Hand.**

The U.S. military used a variety of herbicides for two purposes: crop destruction and defoliation.. The most widely used herbicide, Agent Orange, contained 50% 2,4-D and 50% 2,4,5-T,<sup>30</sup> Operation Ranch Hand began in 1961 as an experimental program. Before the onset of conventional combat operations in 1965, defoliation and crop destruction aimed to prevent the transfer of military supplies and manpower from North Vietnam in South Vietnam. As the war intensified, the U.S. military increased the volume and scope of herbicide operations, assuming that the alternation of the physical landscape would protect American soldiers on the ground and make search and destroy operations easier. The first significant increase in herbicide operations was in 1965 when the U.S. Air Force introduced the chemical now known as Agent Orange. Although the U.S. military continued to use other chemicals, Agent Orange comprised more than half of all herbicide operations from 1965 to 1972.

The use of Agent Orange reflected an attempt “to simplify the battlespace”<sup>31</sup> through the application of technology previously used in the context of commercial agricultural production. The NLF used the cover of the forest to its tactical advantage, establishing sanctuaries and moving supplies and soldiers without exposing itself to the U.S. military’s aerial surveillance. Defoliation operations aimed to purify the physical space of the land and control the bodies of both the NLF/NVA soldiers and South Vietnamese

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<sup>30</sup> 2,4-D and 2,4,5-T are chlorophenoxy acids, which are synthetic plant hormones that act on a plant’s gene transcription receptors. 2,4,5-T is a systematic herbicide that is absorbed through foliage and roots and then translocated throughout a plant. 2,3,7,8-TCDD (dioxin) is formed as a byproduct of the manufacturing process. See “2,4,5-T,” *Environmental Encyclopedia*. Vol. 2. 4th ed. (Detroit: Gale, 2011): 1675-1676 and Bill Freedman, “Herbicide,” *Environmental Encyclopedia*. Vol. 2. 4th ed. (Detroit: Gale, 2011): 856-859.

<sup>31</sup> Bousquet, 160.

civilians that inhabited it.<sup>32</sup> Military strategists understood the spatial boundaries produced by defoliation operations as a map of the state's political control, and sought to manipulate the terrain of uncontrolled areas as to make them more visible and legible to state authorities. This spatial strategy relied on an aerial optic, assigning coordinates taken from French colonial period maps with suspected NLF sanctuaries on the ground.

Herbicide spraying was rooted in a "strategy [that] equated visibility, or the ability to see, with the ability to virtually control an area,"<sup>33</sup> not only on the battlefield, but in civil society. This less obvious function of herbicide spraying was to force civilians into government-controlled areas and strategic hamlets. If civilians left the countryside, the military could, hypothetically, isolate the insurgency. The displacement of civilians from contested areas formed part of an explicit refugee production policy.<sup>34</sup> As an interrogation report noted, "the people in [sprayed] areas had no choice but to move. The only alternative was to starve."<sup>35</sup>

Although the U.S. military often cited the civilian use of herbicides in defense of their use during the Vietnam War, they were not originally designed as commercial products and the manufacturing process significantly different. As a result of the increasing volume of military orders for herbicides, chemical manufacturers raised the temperature used to synthesize 2,4,5-T in order to speed up and increase production. The rates of application were "considerably greater than required for crop destruction or yield

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<sup>32</sup> Maureen Sioh, "An ecology of postcoloniality: disciplining nature and society in Malaya, 1948-1957," *Journal of Historical Geography* 30 (2004): 736.

<sup>33</sup> Phuong-Lan, 3.

<sup>34</sup> Hank Ellison, *Chemical Warfare During the Vietnam War: Riot Control Agents in Combat* (New York: Belknap, 2011), 12.

<sup>35</sup> "Effects of Defoliants in Hoai An District, Binh Dinh Province, April 5, 1967," Vietnam Archive Collection, The Virtual Vietnam Center and Archive, Texas Tech University, Item #: F034601330543.

reduction,”<sup>36</sup> and the U.S. Department of Agriculture conceded that the U.S. military was not following domestic controls in the use of Agent Orange in Vietnam.<sup>37</sup>

The Defense Federal Supply Center directly purchased herbicides from chemical manufacturers, and the USDA had no regulatory control over the U.S. military’s herbicide purchases.<sup>38</sup> In March 1965, Dow Chemical invited representatives from Monsanto, Hooker Chemical Corporation, Diamond Alkali Company, and Hercules Powder Company to a presentation on the current state of dioxin research. Dow provided each company with samples of dioxin and briefed them on protective measures for company scientists handling the samples. A representative from Monsanto explained that Dow shared information with its competitors “because they did not think they could, in conscience, not tell industry about their findings.” Although Dow shared analytical, testing, and toxicological information, it did not mention its knowledge of methods to reduce dioxin contamination because of its secrecy agreement with Boehringer Sohn. Dow scientists emphasized the limited capacity of current detection methods—primarily vapor phase chromatography—to detect dioxin in its own samples, noting that animals exhibited symptoms of dioxin exposure even when dioxin was not detected in the samples.

After explaining current technology to detect and address dioxin contamination, Dow expressed concern about “customers using finished products under far less desirable conditions of health control than we can provide our workmen in our own

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<sup>36</sup> Robert A. Darrow, *Herbicides Used in Southeast Asia*, United States Army, Plant Sciences Laboratories, Fort Detrick, August 1969, p. 38, Alvin Young Collection, Item ID: 02151.

<sup>38</sup> Alvin Young, December 2006. DoD testing p. 8.

plant.”<sup>39</sup> After visiting test animals and viewing the symptoms of dioxin exposure, the company representatives agreed that they “could not afford to sell contaminated products.”<sup>40</sup> Dow hoped that “[the industry] clean up our own house from within rather than having someone from without do it for us,”<sup>41</sup> suggesting that its primary concern was restrictive legislation or increased government oversight. An important shift in the discourse regarding the health effects of Agent Orange occurred when the possibility . As scientists produced more and more studies suggesting the toxic effects of Agent Orange, chemical companies emphasized that the problem was the dioxin contaminant, not the herbicide 2,4,5-T.

## Chapter

The U.S. military’s original plans for Operation Ranch Hand suggest that legal concerns influenced policy and logistical decisions. In order to present the program as under the full authority of the South Vietnamese government, Ranch Hand airplanes were stored alongside President Diem’s private planes at the U.S. base in Bien Hoa. Although the U.S. Air Force initially planned to remove American markings from the airplanes and replace them with Government of South Vietnam markings, a pilot involved in the first stages of the program recalled that Air Force commanders never implemented the plan because they thought changing the planes’ markings made no

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<sup>39</sup> “Report of the Chloracne Problem Meeting on 3/24/65, March 29, 1965,” V.K. Rowe (Biochemical Research Laboratory) to Dow Chemical Dept. Heads., Item #: 6130101098 Admiral Elmo R. Zumwalt, Jr. Collection: Agent Orange Correspondence, The Vietnam Center and Archive, Texas Tech University.

<sup>40</sup> “Report of the Chloracne Problem Meeting on 3/24/65, March 29, 1965,” V.K. Rowe (Biochemical Research Laboratory) to Dow Chemical Dept. Heads?, VVA. 6130101098 Admiral Elmo R. Zumwalt, Jr. Collection: Agent Orange Correspondence, The Vietnam Center and Archive, Texas Tech University.

<sup>41</sup> V.K. Rowe to Ross Mulholland (Manager of Bioproducts, Dow Chemical of Canada), “2,4,5-Trichlorophenol, the “T” Acids, and Associated Acnegens, June 24, 1965,” Item #: 6170207001, Admiral Elmo R. Zumwalt, Jr. Collection: Agent Orange Studies, The Vietnam Center and Archive, Texas Tech University.

sense. Instead of cosmetic changes, the U.S. Air Force had a member of the ARVN fly on all initial missions since the United States maintained its strictly advisory role until 1965.<sup>42</sup> The precautions taken during the Kennedy administration's initiation of herbicide operations demonstrated the uneasiness that, as Walt Rostow wrote to President Kennedy, "this is a kind of chemical warfare."<sup>43</sup> Until 1965, the Department of Defense and Department of State prohibited MACV from briefing journalists on the herbicide program in an attempt to limit public knowledge.<sup>44</sup> The portrayal of herbicide operations as the sole responsibility of the South Vietnamese government reflected an attempt to deny any U.S. legal obligations for the effects of the program.

International opposition to herbicide operations began under the Johnson administration and spread far beyond nations allied with the Soviet Union. Theodore Heavner recalled that his colleague at the Vietnam Working Group during the start of the herbicide program, W. Averell Harriman, was quite concerned about the international ramifications of the program because "destroying food crops was a form of warfare that would backfire on us... it would be seen worldwide as an inhumane kind of weapon."<sup>45</sup>

The Geneva Protocol of 1925 was central to the legal debate on herbicides, which had banned "the use in war of asphyxiating, poisonous or other gases, and of all

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<sup>43</sup> Quoted in Phuong-Lan, 20.

<sup>43</sup> Quoted in Phuong-Lan, 20.

<sup>44</sup> Ellison, 7 and 17.

<sup>45</sup> Interview with Theodore J.C. Heavner. By Charles S. Stuart, May 28, 1997, Library of Congress, *Frontline Diplomacy: Foreign Affairs Oral History Collection of the Association for Diplomatic Studies and Training*, Library of Congress, Manuscript Division, Washington D.C., <http://hdl.loc.gov/loc.mss/mfdip.2004hea03> (accessed October 23, 2011).

analogous liquids, materials or devices.”<sup>46</sup> The language of the Geneva Protocol was formulated at the Washington Conference in 1922. General Pershing, a member of the U.S. delegation at the Washington Conference, submitted a resolution that specifically prohibited “chemical warfare including the use of gases, whether toxic or non-toxic,”<sup>47</sup> fearing that distinctions could not be made on the lethality of chemicals.

The U.S. Army Chemical Service and chemical companies lobbied against the ratification of the Geneva Protocol, and consequently the Senate never voted on it.<sup>48</sup> Even though NATO allies, Warsaw Pact members, the U.S.S.R., and China signed on to the Geneva Protocol, it never passed the Senate and was eventually withdrawn by President Truman. However, some argued that the overwhelming ratification of the Protocol constituted customary international law.

In 1966, the International Committee of the Red Cross inquired whether the U.S. would adhere to the international norms of the 1925 Geneva Protocol. The State Department maintained that the U.S. would not declare any particular position regarding the Protocol, privately acknowledging it “[knew] perfectly well that most of the signatories regard the Protocol as covering all gas warfare and not just poison gas.”<sup>49</sup>

Although the U.S. was not a party to the Protocol, a 1966 United Nations General Assembly Resolution stated that the Protocol had achieved the status of customary law

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<sup>46</sup> “Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare,” League of Nations, Geneva, 17 June 1925.

<sup>47</sup> Aldrich and Feldman, “International Law Restraints on the use of Non-Lethal Gases in Combat, September 27, 1965,” National Archives: College Park, MD, R59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 1, File: Chemical and Biological weapons: Vietnam 1965-66.

<sup>48</sup> Jonathan Tucker, *War of Nerves: Chemical Warfare from World War I to Al-Qaeda*, New York: Anchor Books (2007): 21-22.

<sup>49</sup> Meeker to Futterman, “Memo, September 30, 1966,” National Archives: College Park, MD, R59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 1, File: Chemical and Biological weapons: Vietnam 1965-66.

and was binding on all states engaged in international conflicts, whether or not a state was a signatory to the Protocol.<sup>50</sup>

In 1966, a proposed National Security Action Memorandum (NSAM) on chemical and biological warfare included the first explicit statement that the Geneva Protocol did not apply to “riot control agents, defoliants, or anti-crop weapons.”<sup>51</sup> The exclusion of these chemical agents from the U.S. interpretation of the Protocol hinged on the fact that they were non-toxic and did not persist in the environment.

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<sup>50</sup> UN General Assembly, Res. 2162 B (XXI) of 5 December 1966, § 1.

<sup>51</sup> “Proposed NSAM on chemical and biological warfare, Nov. 17, 1966,” National Archives: College Park, MD, R59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 1, File: Chemical and Biological weapons: Vietnam 1965-66.

### **CHAPTER THREE: The Effects of Operation Ranch Hand in Vietnam.**

Although Washington was primarily concerned with international accusations of chemical warfare and the military effectiveness of herbicides, the NLF and South Vietnamese civilians were concerned with how to contain chemical exposure and preserve food sources. When herbicides drifted into settlements, some villagers immediately experienced nausea, nosebleeds, and dizziness. Civilians directly sprayed by herbicides or in close contact with sprayed crops developed skin rashes, the most common symptom of dioxin exposure.<sup>52</sup> Often, villagers checked on their crops after spraying, increasing their chances of exposure when they entered contaminated agricultural plots.<sup>53</sup>

However, the majority of exposure to dioxin was, and continues to be, through the food and water supply. Although herbicide spraying primarily targeted rice, several secondary crops were also damaged, including maize, manioc, sugarcane, papaya, and rubber trees. Domestic animals were also affected by herbicide spraying, and villagers reported that chickens and pigs died shortly after spraying while cattle and dogs died in the weeks that followed. Most important to villagers in the Mekong Delta, where fish was a significant part of the diet, swollen fish with blackened gills rose to the surface of the rivers and died. Some villagers ate the dead fish, although there is evidence that American soldiers warned villagers not to eat them in some areas.<sup>54</sup>

Captured NLF soldiers expressed more concern about the safety of herbicides than the effect of herbicide operations on military efforts, insisting that miscarriages and

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<sup>52</sup> “Effects of Defoliants in Hoai An District, Binh Dinh Province, April 5, 1967,” Vietnam Archive Collection, The Vietnam Center and Virtual Archive, Texas Tech University, Item #: F034601330543.

<sup>53</sup> Gerald Hickey, *Crop Destruction in Vietnam* (RAND: Santa Monica, CA, 1969): 9.

<sup>54</sup> Hickey, 17.

dead livestock and crops were more important to the maintenance of NLF morale.<sup>55</sup>

The NLF urged local health clinics to promote the use of protective covering of the skin and food crops. Villagers used tents and nylon sheets to cover their crops and threw away unprotected food supplies.<sup>56</sup>

A large component of America's pacification strategy depended on development programs. Military officials hoped that providing technical assistance and fertilizers would increase production and demonstrate the benefits of the South Vietnamese government. Although timber had been an important export of South Vietnam, the timber industry lost revenue as defoliation destroyed more and more forests.<sup>57</sup> In 1967, a study commissioned by the Pentagon reported that defoliation destroyed over a half a billion dollars in timber exports.<sup>58</sup> That same year, the CORDS Chief of the Agricultural Branch expected that it would take 80 to 100 years for deforested areas to return to full productivity.<sup>59</sup>

Unemployment was particularly acute near rubber plantations, and MACV advised the South Vietnamese Ministry of Labor to develop contingency plans for large-scale unemployment in the rubber industry due to "unprecedented biological changes" in

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<sup>55</sup> "Interrogation Report Concerning Defoliation of Viet Cong Controlled Village in South Vietnam, May 5, 1967," Vietnam Archive Collection, The Vietnam Center and Archive, Texas Tech University, Item#: F034601081851.

<sup>56</sup> Interrogation Report for Nguyen Luu Thanh Regarding Viet Cong Defense against Defoliation, 29 April 1967," Vietnam Archive Collection, The Virtual Vietnam Center and Archive, Texas Tech University, Item #: F034601111875.

<sup>57</sup> Rex L. Searson (Province Senior Advisor, Long Khanh), "Defoliation Impact in Long Khanh, December 11, 1967," National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100 Herbicide Damage Claims, 1967.

<sup>58</sup> Lars L. Hyde to Mr. Moffett, "Briefing by Matt Meselson on Herbicides, October 20, 1970," National Archives: College Park, MD, RG 59, Bureau of Administration Office of Information Services, Records Relating to Agent Orange (Special Collection), 1961-1974, Box 2, File: POL 27-10 Herbicides: Jan.- March 1972.

<sup>59</sup> Report from Chief of Agricultural Branch/CORDS, III CTZ to DEP/CORDS, III CTZ, "Defoliation in Long Khanh Evaluation, December 12, 1967," National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100 Herbicide Damage Claims, 1967.

rubber trees.<sup>60</sup> French nationals owned the majority of the rubber plantations in South Vietnam, and U.S. officials were in frequent contact with French businessmen regarding the extent and economic effects of herbicide damages. Michelin closed all of its rubber plantations by the end of 1966 and even attempted to sell its properties to the GVN.<sup>61</sup> Two large French-owned rubber plantations, Societe de Plantations des Terres Rouges and Societe des Caouchose Dextreme Orient, both reported profit losses in 1967 due to reduced production, drawing public attention to the economic effects of herbicide operations.<sup>62</sup> A French plantation owner admitted that he was initially skeptical of reports that defoliant sprays were poisonous, but that the damage to his rubber trees had reached a “disastrous level.”<sup>63</sup>

The South Vietnamese Commissioner of Labor warned MACV commanders that defoliating forests and rubber trees increased unemployment and damaged the national economy, and that the continuation of defoliation missions would hamper long-term economic growth.<sup>64</sup> However, the spokesman for the U.S. Defense Department, Jerry Friedman, defended herbicide operations by suggesting that defoliation actually helped

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<sup>60</sup> Mr. Calhoun and David Carpenter, “Recommended Mission Response to Recent Allegations of Damage to Rubber Plantations by GVN/US Aerial Herbicide Missions, April 6, 1967,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100, Rubber Tree Damage, 1967.

<sup>61</sup> Memo from John Marks to CORDS and Saigon Embassy, “French Rubber Plantations, September 27, 1967,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100, Rubber Tree Damage, 1967.

<sup>62</sup> Lee Lescaze, “Decline of Rubber Plantations Endangers S. Viet Economy,” *The Washington Post*, August 6, 1968, p. 3.

<sup>63</sup> Francis de Tarr to Mr. Calhoun, “Call from M. Marc Conte, Director General of Societe des Plantations des Terres Rouges, March 31, 1967,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100, Rubber Tree Damage, 1967.

<sup>64</sup> Letter from Commissioner of Labor to MACV Commander, III CTZ, “Phuoc Hoa and Labbe Rubber Plantations intend to discharge about 650 workers, March 24, 1967,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100, Rubber Tree Damage, 1967.

the South Vietnamese economy. Responding to media criticism, he insisted that “defoliation permits easier access, so crews can go in and bring out the wood.”<sup>65</sup>

The South Vietnamese Ministry of Interior accepted full responsibility for defoliation and crop destruction claims, ostensibly to demonstrate the effectiveness of the South Vietnamese government and win the support of the rural population.<sup>66</sup> The U.S. government funded South Vietnamese payments to compensate for war damages, but emphasized it was not responsible for processing damage claims or insuring that farmers were properly compensated.

The Chief of the Chemical Operations Division instructed MACV to not refer to crop damages in the official response to damage claims, noting that “it could be interpreted as an admission of guilt.”<sup>67</sup> In response to an increasingly high volume of claims in 1968, the MACV Chief of Staff alerted all U.S. commanders that all compensation claims were to be denied because the damages arose from combat and were not covered by the Foreign Claims Act.<sup>68</sup>

In 1967, two RAND studies on the herbicide program used interviews with over 2,400 NLF defectors and Vietnamese civilians, USAID reports, and military data to analyze the effectiveness of defoliation and crop destruction operations.<sup>69</sup> They found that civilians were not warned prior to spray missions, educated about the herbicide

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<sup>65</sup> Anthony Lewis, “Defoliation contravenes Hague Convention,” *The Irish Times*, January 20, 1971, p. 7.

<sup>66</sup> George S. Prugh, *Law at War, Vietnam 1964-1973* (Department of the Army: U.S. GPO, 1975): 85.

<sup>67</sup> Memo for the record, W.T. Moseley (Chief of Chemical Operations Division) “Alleged Herbicide Damage to Rubber Trees, April 5, 1967,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100, Rubber Tree Damage, 1967.

<sup>68</sup> Cable from Charles Corcoran (MACV Chief of Staff) to MACV commanders, “Claims Against the United States, Nov. 30, 1968,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100 Herbicide Damage Claims, 1968.

<sup>69</sup> Russell Betts and Frank Denton, *An Evaluation of Chemical Crop Destruction in Vietnam*, (Santa Monica: Rand, October 1967); Anthony J. Russo, *A Statistical Analysis of the U.S. Crop Spraying Program in South Vietnam* (Santa Monica: Rand, October 1967).

program, or able to collect compensation for damages.<sup>70</sup> A significant percentage of the civilian population feared that the chemicals used to spray crops were poisonous to humans, and the studies concluded that the program only reinforced NLF propaganda and negatively affected civilians, “the target of our long-range pacification efforts.”<sup>71</sup> The reports concluded that the civilian population suffered most of the consequences of crop destruction programs, predicting that more than 50% of the rural economy would have to be destroyed before crop destruction affected NLF rice consumption.<sup>72</sup>

However, both studies provoked controversy among senior researchers at RAND who worried that the Air Force would not appreciate criticism of its operations. The author of one of the studies, Anthony Russo, traveled to Saigon to brief U.S. Air Force representatives on the benefits and drawbacks of the crop destruction program. The only person that attended his presentation was General Westmoreland’s scientific advisor, Bruce Griggs, who told him to go back to California because the program worked. However, the RAND studies did reach Defense Secretary Robert McNamara, convincing him to initiate the first systematic study of the effectiveness of the herbicide program.<sup>73</sup>

The interagency review of the herbicide program began in December 1967, and included military officials, representatives from the Agency for International Development, and members of the Political and Economic Sections of the U.S. embassy in Saigon. The option to end the herbicide program was never discussed, but

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<sup>70</sup> Betts and Denton, xii.

<sup>71</sup> Betts and Denton, xii.

<sup>72</sup> Russo, xi and 32.

<sup>73</sup> Russo was subsequently fired by Charlie Wolf, the Chairman of the Economics Department at RAND. See Mai Elliott, *RAND in Southeast Asia: A History of the Vietnam War Era* (Santa Monica, CA: RAND, 2010): 226-228 and 437.

embassy officials expressed concern about civilian crop damages and argued that herbicide operations undermined rural reconstruction efforts.<sup>74</sup> There was a growing consensus that crop destruction programs hampered pacification efforts and prompted international criticism.

### Chapter Three:

By 1967, the U.S. military had requisitioned the entire domestic stock of herbicides, leading to domestic shortages and emergency orders for Agent Orange from chemical manufacturers. In March 1967, the U.S. Air Force invoked the Defense Production Act of 1950 to accelerate the delivery of herbicides.<sup>75</sup> Dow representatives indicated their unhappiness about the military's increasing demand for herbicides, emphasizing that the military's requests were making it impossible for them to supply the civilian market.<sup>76</sup>

However, pressure on production capabilities did not impede research into more potent herbicides. In the summer of 1968, Dow alerted the U.S. military about a new herbicide—"Super-Orange." Super-Orange contained 2,4-D and 2,4,5-T like Agent Orange, but also included arsenic.<sup>77</sup> This new chemical composition produced immediate effects, affected a variety of species, and persisted in the soil longer.

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<sup>74</sup> Elizabeth Pond, "U.S. officials review Viet defoliation," *The Christian Science Monitor*, December 27, 1967, p. 4.

<sup>75</sup> For more details on the Defense Production Act, See: Jonathan Glasser, "The Government Contractor Defense: Is Sovereign Immunity A Necessary Prerequisite?" *Brooklyn Law Review* 52, no. 495 (1986): 512-514.

<sup>76</sup> Letter from R.A. Mickman (Manager of U.S. Government Marketing Department) to Mosley Koster (Business and Defense Services Administration, Department of Commerce), March 29, 1967, Item #: 6130101086, Admiral Elmo R. Zumwalt, Jr. Collection: Agent Orange Correspondence, The Vietnam Center and Archive, Texas Tech University.

<sup>77</sup> Letter from Dow Chemical "Herbicide M-3393, July 9, 1968," Item #: 6230801041, Admiral Elmo R. Zumwalt, Jr. Collection: General Subject Files, The Vietnam Center and Archive, Texas Tech University.

U.S. government officials dismissed claims that herbicides were harmful to human health as the product of “propaganda war.”<sup>78</sup> The U.S. military attributed some damage to leaky spray equipment and accidental drift, but insisted that damage to agricultural crops was primarily due to the “misuse... careless handling and disposition of used containers.”<sup>79</sup> MACV recommended that used drums should not be released to the public because they were almost impossible to clean and could cause serious damage. However, the disposition of herbicide drums continued to be the sole responsibility of the ARVN.<sup>80</sup>

Due to the increased media speculation regarding the health effects of herbicides, the South Vietnamese government prohibited newspapers from reporting on scientific research.<sup>81</sup> In addition, the majority of South Vietnamese hospitals did not keep records in the last phase of the war, and Vietnamese doctors did not receive any information about the symptoms of herbicide exposure.<sup>82</sup> The Saigon Embassy requested technical assistance and laboratory equipment from the United States to evaluate the effects of the herbicide program to no avail.<sup>83</sup>

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<sup>78</sup> Philip Potter, “Red Vietnam Assails U.S. Defoliation,” *The Sun* January 25, 1962, p. 2.

<sup>79</sup> Barry R. Flamm (Chief of Forestry Branch), “Trip Report: Danang Oct 25-26, 1968, October 31, 1968,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100 Herbicide Damage Claims, 1968.

<sup>80</sup> Memo from John Moran (Chief of Chemical Operations Division) to Robert McColleston (U.S.A.F.), “Herbicide Damage to Vegetable Plots Vicinity Da Nang Air Base, October 31, 1968,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100 Herbicide Damage Claims, 1968. See also MACV, “Vietnam Lessons Learned No. 74: Accidental Herbicide Damage, September 15, 1969,” *Combined Arms Research Library Digital Library*, U.S. Army Command and General Staff College, Call #: VN COLL MACV LL 74.

<sup>81</sup> Ralph Blumenthal, “U.S. Shows Signs of Concern Over Effect of 9-Year Defoliation Program in Vietnam,” *New York Times*, March 15, 1970, p. 14.

<sup>82</sup> Ralph Blumenthal, “U.S. Shows Signs of Concern Over Effect of 9-Year Defoliation Program in Vietnam,” *New York Times*, March 15, 1970, p. 14.

<sup>83</sup> D.G. MacDonald (Director of Saigon Embassy) to Wade Latham (Asst. Chief of Staff for CORDS), “Defoliation in Long Khanh Province, January 13, 1968,” National Archives: College Park, MD, RG 472, MACV, Box 18, File: 401-100 Herbicide Damage Claims, 1968.

Neither American nor Vietnamese scientists had access to samples of defoliated crops or trees because the U.S. military banned on-site inspections due to security concerns.<sup>84</sup> Without on-site inspections, scientists could not collect evidence to assess the health and environmental effects of herbicides, making it virtually impossible to produce scientific data that could provoke a change in policy.

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<sup>84</sup> Mr. Calhoun and David Carpenter, "Recommended Mission Response to Recent Allegations of Damage to Rubber Plantations by GVN/US Aerial Herbicide Missions, April 6, 1967," National Archives: College Park, MD, RG 472, MACV, Box 18, 401-100, Rubber Tree Damage, 1967.

## **CHAPTER FOUR: Agent Orange during the Nixon Administration.**

The Nixon administration's efforts at détente through disarmament and his domestic push for environmental legislation complicated the military's use of herbicides in Vietnam. Although there were frequent accusations of chemical warfare from the beginning of the herbicide program in 1961, the debate over the legality of their use escalated in 1969 within the context of President Nixon's November 25<sup>th</sup> announcement to draft a biological weapons convention and resubmit the Geneva Protocol to the U.S. Senate for ratification.<sup>85</sup>

Environmentalism emerged as part of a broader movement of social protest and activism in the late 1960s. Environmentalists adapted strategies from the civil rights movement, using media attention and public hearings to increase awareness and influence public policy. A Gallop poll found that the percentage of the American public that considered pollution and ecology an important national problem increased from 1% in 1960 to 25% in 1970.<sup>86</sup>

Although the 1968 Presidential campaigns rarely referred to the environment, the Nixon administration endorsed federal environmental policy in an effort to attract the support of new environmentalist constituencies within both political parties.<sup>87</sup> John Whitaker, President Nixon's Assistant to Natural Resources, Energy, and the Environment in the Domestic Council, explained:

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<sup>85</sup> "NSDM 35: United States Policy on Chemical Warfare Program and Bacteriological/Biological Research Program, November 25, 1969," *DNSA*, Presidential Directives II, Item #: PR00086.

<sup>86</sup> Lazarus, 53.

<sup>87</sup> J. Brooks Flippen, "Pests, Pollution, and Politics: The Nixon Administration's Pesticide Policy," *Agricultural History* 71, no. 4 (Fall 1997): 443.

“It had come up very strongly in the polls. It was obvious that the President had become President just at the time when this had become a great issue, and the government was totally unorganized to deal with it.”<sup>88</sup>

The National Environmental Policy Act, first proposed by Senator Henry “Scoop” Jackson in 1968, reflected the increasing political influence of environmentalists and scientists. President Nixon signed the National Environmental Policy Act on January 1, 1970, which mandated an environmental impact statement process, established an Environmental Quality Council within the Executive Office of the President, and required the EQC to provide Congress with annual reports on the state of the environment.

In addition, over the summer of 1969, disagreements over current and future chemical warfare policies arose between the State Department and Department of Defense. While the Department of Defense maintained that the Geneva Protocol was not binding as customary international law, the State Department recommended an immediate end to all crop destruction operations.<sup>89</sup> However, Nixon’s interpretation of the 1925 Geneva Protocol maintained a distinction between anti-plant and anti-personnel weapons, arguing that the Protocol did not cover the use herbicides and riot-control agents.

In October 1969, President Nixon issued a Presidential Directive severely restricting the domestic use of 2,4,5-T due to a recommendation from the Department of Agriculture. A Bionetics Research Laboratories study linking 2,4,5-T exposure to birth defects prompted the Department of Agriculture’s recommendation to restrict 2,4,5-T. Although the study concluded in 1968, the results were not released until Ralph Nader

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<sup>88</sup> John Whitaker Exit Interview, Nixon Archives, p. 10.

<sup>89</sup> Halperin Memo to Kissinger, “U.S. Policy, Programs and Issues of CBW, August 28, 1969,” *DDRS*, Document #: CK3100522800.

leaked the study to a reporter in the summer of 1969. The Pentagon insisted that no changes would be made in the military use of 2,4,5-T, but the Defense Department reiterated the need to take precautions when using 2,4,5-T near populated areas in South Vietnam.<sup>90</sup> At the same time, U.S. media reports began to discuss the possibility that the U.S. military would phase out herbicide operations because of accidental crop damages and the inability to control chemical spray drift.<sup>91</sup>

A December 1969 United Nations General Assembly Resolution raised the stakes of the Nixon administration's interpretation, calling for the strict observance of the Geneva Protocol and declaring that it prohibited all "chemical substances, whether gaseous, liquid, or solid, which might be employed because of their direct toxic effects on man, animals, or plants."<sup>92</sup> The U.S. State Department insisted the U.N. General Assembly was not the appropriate forum to debate international law, arguing that the resolution did not represent an international consensus.<sup>93</sup> Lee DuBridge, the Science Advisor to the White House, cautioned that negative press coverage of the use of herbicides in Vietnam created a need for the administration to maintain some flexibility on the increasingly controversial program as "to demonstrate that the U.S. attitude... is not one of complete intransigency."<sup>94</sup>

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<sup>90</sup> Richard Homan, "New Curb Won't Affect Viet Defoliation," *The Washington Post*, October 31, 1969, A2.

<sup>91</sup> John Woodruff, "U.S. Is Expected To End Task Of Viet Defoliation," *The Baltimore Sun*, August 30, 1969, p. A1.

<sup>92</sup> UN General Assembly, Res. 2603 B (XXIV) of 16 December 1969, § 2. The Resolution passed 80 to 3 with 35 abstentions. The United States, Portugal, and Australia opposed the resolution, while Japan and NATO countries abstained.

<sup>93</sup> Tad Szulcs, "U.S. Criticizes Vote in U.N. on Meaning of Chemical Warfare Ban," *New York Times*, December 12, 1969, p. 18.

<sup>94</sup> Lee A. DuBridge Letter to Kissinger, "[Next Steps in U.S. Chemical and Biological Weapons Policy], December 22, 1969," *DNSA, Terrorism and U.S. Policy 1968-2002*, Item #: TE00064.

Henry Kissinger noted that “the Protocol itself prohibits *any* use of chemical and bacteriological agents in war among Parties,” and worried that the United Nations General Assembly would refer the interpretation of the Protocol to the International Court of Justice. Kissinger was particularly troubled by the possibility of “a war crimes trial of personnel sanctioning or using [weapons included within the scope of a broader interpretation of the Protocol].”<sup>95</sup>

The White House’s reluctance to send the Protocol to the Senate attracted domestic and international attention. Domestic critics emphasized that delays on ratification hearings resulted from the Nixon administration’s strategy of waiting until the Vietnam War slowed down so that the issue of herbicides “would be more academic.”<sup>96</sup>

In 1970, the Department of Commerce assumed responsibility for the regulation of international herbicide transactions from the State Department’s Office of Munitions Controls.<sup>97</sup> Due to the rising criticism of the herbicide program in Vietnam in both the domestic and international arenas, the State Department no longer classified 2,4,5-T as a military weapon and removed it from its munitions list. The reclassification of herbicides as a commercial, civilian commodity reflected an attempt to efface the military potential of a dual-use technology and substantiate the Nixon administration’s claim that the use of herbicides in war did not violate international law.

A domestic ban on dioxin-contaminated herbicides began on January 1, 1970 due to scientific research on possible birth defects, yet the State Department did not

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<sup>95</sup> Elliot Richardson Memo to Nixon, “Submission of 1925 Geneva Protocol to Senate, February 18, 1970,” *DNSA*, Presidential Directives Part II, Item #: PR00088.

<sup>96</sup> Robert M. Smith, “Capital Warned on Gas War Pact,” *New York Times*, July 22, 1970, p. 1.

<sup>97</sup> “The Case for Chemical Export Controls,” Rangel, p. 19063. 119 Cong. Rec. 19063 (1973), House of Representatives - Monday, June 11, 1973, p. 19064.

suspend the use of Agent Orange in Vietnam until April 15, 1970.<sup>98</sup> By the summer of 1970, the U.S. military admitted its concern about the possibility of persistent contamination of the land and water, but insisted that the ARVN was singularly responsible for the storage and use of herbicides.<sup>99</sup> Congressional opposition mounted when the Nelson and Goodell amendments to prohibit funding of all herbicides in the next year's defense budget gained support from both Republicans and Democrats. U.S. military officials assumed that budget constraints would drastically reduce or end herbicide operations because they were not a high priority in military planning.

However, on August 18<sup>th</sup>, 1970, President Nixon approved the continuation of defoliation missions but specifically ordered MACV's press office to not make his decision public or refer to it if questioned on the status of the herbicide program.<sup>100</sup> In October 1970, several American newspapers reported that U.S. soldiers continued to use Agent Orange and that MACV was aware of its continued use but had not stopped it. That same month, as a result of the press coverage, Secretary of Defense Melvin Laird ordered MACV to assume central control of the remaining stocks of Agent Orange.<sup>101</sup>

An Inter-Agency Political Military Group noted that using herbicides for crop destruction "has no parallel,"<sup>102</sup> representing the growing consensus within the

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<sup>98</sup> Cable from Rogers to Saigon Embassy, "Regarding the Department of Agriculture (DOA) suspension of certain weed killers, April 15, 1970," *DDRS*, Document #: CK3100537602.

<sup>99</sup> COMUSMACV to CINCPAC, "Herbicides, September, 1970," National Archives: College Park, MD, RG 472, MACV, Box 11, File: 208-01, Operation Planning Files: Herbicide Program.

<sup>100</sup> William M. Hammond, *Public Affairs: The Military and the Media, 1968-1973* (Washington D.C.: Center of Military History, 1996): 376.

<sup>101</sup> Graham A. Cosmas, *MACV: The Joint Command in the Years of Withdrawal, 1968-1973* (Washington D.C.: Center of Military History, United States Army, 2007): 262.

<sup>102</sup> Interdepartmental Political-Military Group, "Annual Review of United States Chemical Warfare and Biological Research Programs, December 5, 1970," National Archives: College Park, MD, RG 59,

Administration that crop destruction programs hampered pacification efforts and prompted international criticism. Similarly, a legal advisor to the State Department, L. Craig Johnstone, submitted a report in regarding the U.S. government's interpretation of the Geneva Protocol. Criticizing the argument that herbicides were legal because they were used domestically during peacetime, he noted that "herbicides are not used for crop destruction and systematic forest defoliation in their normal domestic agricultural applications."<sup>103</sup> Johnstone compared domestic and wartime uses of herbicides to the difference between nuclear fission technology and nuclear bombs, arguing that the peaceful use of nuclear power did not preclude restrictions on the use of nuclear bombs. Similarly, the use of herbicides as an agricultural product could not prevent international limitations on the use of herbicides as a military weapon.

On December 26, 1970, the White House announced that the U.S. military would begin to phase out herbicide operations. The announcement came a week earlier than planned due to the upcoming release of the American Association for the Advancement of Science report, expected to be highly critical of the herbicide program. Kissinger asked President Nixon's permission to announce the phase out early so "it would not look as though we were listening to the howls of that society."<sup>104</sup> Nixon agreed, but

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Records Relating to Agent Orange (Special Collection) 1961-1974, Box 3, File: Copies of Documents Retrieved from the Central Foreign Policy Files, 1961-1971, folder 2 of 2.

<sup>103</sup> L. Craig Johnstone, "The United States' Understanding of the Geneva Protocol of 1925, December 1, 1970," *DDRS*, Document #: CK3100518058.

<sup>104</sup> Telecon, The President and Mr. Kissinger, "[Prisoners of War List; Herbicides in Vietnam War; Trial for Suspected Hijackers], 12pm, December 26, 1970," DNSA, Kissinger Telephone Conversations, Item #: KA04650.

ordered Kissinger to announce the phase out through a succinct press statement because “the people don’t give a damn about what we are doing about herbicides.”<sup>105</sup>

The press release maintained that the use of herbicides in South Vietnam conformed to domestic uses, but announced that herbicide operations would now be limited to base perimeters and remote areas.<sup>106</sup> Laird emphasized that the phase out of herbicide operations would preserve the option to reinstate the program “to protect American lives.”<sup>107</sup>

The State Department was particularly worried about the upcoming Senate hearings on the Geneva Protocol and its relation to the continued use of herbicides in Vietnam. McGeorge Bundy no longer supported Nixon’s interpretation of the Geneva Protocol after meeting with Matthew Meselson, a scientist leading the American Association for the Advancement of Science’s investigations in Vietnam. He praised the Nixon administration’s plan to resubmit the Geneva Protocol, but lamented that “this kind of casual use of [herbicides] is one thing we don’t seem able to control in American belligerency.” Bundy advocated for an ecological restoration program that would strengthen the war effort without provoking “a judgment of the past.” He hoped that the U.S. government would address the growing concern about the herbicide program through the framework of an “ecological, constructive future.”<sup>108</sup>

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<sup>105</sup> Telecon, The President and Mr. Kissinger, “[Prisoners of War List; Herbicides in Vietnam War; Trial for Suspected Hijackers], 12pm, December 26, 1970,” DNSA, Kissinger Telephone Conversations, Item #: KA04650.

<sup>106</sup> Nixon, White House Statement, December 26, 1970.

<sup>107</sup> Laird Memo to Nixon, “Policy Regarding Use of Herbicides in South Vietnam, December 22, 1970,” *DDRS*, Document #: CK3100523314.

<sup>108</sup> Telecon, Bundy to Kissinger, “Chemical Weapons in Vietnam War, January 21, 1971, 9:30am,” *DNSA*, Item #: KA04770.

Kissinger noted that herbicides operations precluded the ratification of the Geneva Protocol, frankly telling Bundy in a private telephone conversation that “if the war in Vietnam were over and this were seen as a means of disciplining further use of it I would think it essential.” Kissinger agreed with Bundy that the upcoming Senate Committee on Foreign Relations hearing on the Geneva Protocol was going to be particularly difficult because the herbicide issue could “surface in a way that’s just pointing out moral ineptitude.”<sup>109</sup> However, Kissinger justified the continuation of U.S. missions because they were “militarily justifiable under current conditions” and that, without a public announcement, the ratification of the Geneva Protocol according to the administration’s particular interpretation would not be affected.<sup>110</sup>

Rogers continued to argue for an immediate end to all herbicide operations to reduce Senate opposition to the ratification of the Geneva Protocol.<sup>111</sup> However, he withdrew his recommendation one day before Senate hearings on the Geneva Protocol after learning that Nixon had agreed with Laird that herbicide operations would continue. While Rogers and Laird were both scheduled to attend the Senate Committee on Foreign Relations hearings on the Geneva Protocol, only Rogers testified. The Senate Foreign Relations Committee sharply criticized the administration’s interpretation of the Protocol, questioning whether Nixon would rather sacrifice the ratification of the Protocol than agree to pass it with the understanding that herbicides were included under its jurisdiction. Rogers responded, “I think it is fair to say if that interpretation was included

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<sup>109</sup> *Ibid.*

<sup>110</sup> Kissinger Memo for Nixon, “Secretary Rogers’ Recommendation to Cease All Use of Herbicides in Vietnam, March 2, 1971,” *DDRS*, Document #: CK3100523198.

<sup>111</sup> Rogers Memo to Nixon, “The Geneva Protocol, February 11, 1971,” *DNSA*, Presidential Directives Part II, Item #: PR00091.

it would jeopardize, might well kill, our adherence to the Protocol. I can't say it any stronger than that.”<sup>112</sup>

T.H. Moorer, the Chairman of the JCS, argued that the degree of U.S. control over potential GVN herbicide operations was the most important political issue regarding the Vietnamization of the program. He warned that the Nixon doctrine would lose credibility if the U.S. refused to supply South Vietnam with herbicides, writing that the U.S. must provide the GVN with “full mission capacity [to] be consistent with the Nixon doctrine.”<sup>113</sup>

The State Department urged its officials “to stand up to the military representatives” who continued to justify both crop destruction and defoliation operations.<sup>114</sup> There was disagreement within the State Department about whether to supply the GVN with any assistance at all regarding herbicides. Legal advisors and members of ACDA thought plans to Vietnamize herbicide operations should be rejected entirely, arguing that to continue to use herbicides would be contrary to Nixon’s announced phase out and could negatively influence Senate negotiations on the Geneva Protocol.

Those inside the Saigon Embassy emphasized that negotiations to give the GVN herbicides, ground sprayers, helicopters, and aircraft were initiated by Washington, not

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<sup>112</sup> Senate Committee on Foreign Relations, *The Geneva Protocol of 1925, Hearing before the Committee on Foreign Relations*, 91<sup>st</sup> Congress, 2D session, March 5, 16, 18, 19, 22, and 26, 1971, 38.

<sup>113</sup> T.H. Moorer (JCS Chairman) to Laird, “Plan for the Support of the RVN with Herbicides, April 9, 1971,” OSD/JS FOIA Library, International Security Affairs, Vietnam and Southeast Asian Documents, Various Health and Human Services Documents on Agent Orange, <http://www.dod.gov/pubs/foi/foiaLibrary.html>.

<sup>114</sup> Lars Hyde to JBM, “Note, May 19, 1971,” RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 3, File: POL 27-12 Herbicides and RCAs, April-June 1971.

Saigon.<sup>115</sup> Officials at the Embassy in Saigon advised against Vietnamization because the military value of herbicides had not been established and it would be “inconsistent with pacification efforts to supply GVN with capability to destroy its own crops and timber.”<sup>116</sup>

However, the Bureau of East Asian Affairs recommended providing the GVN with ground-spraying equipment while rejecting Department of Defense’s plan to provide helicopters and aircraft. With increasing pressure from the Department of Defense, Rogers eventually decided in favor of the Bureau of East Asian Affairs’ plan, noting that ground spraying around bases was clearly distinguishable from large-scale aerial defoliation and crop destruction.<sup>117</sup>

Less than two weeks before the scheduled December 1 deadline for U.S. herbicide operations the Department of Defense proposed to extend the deadline “for as long as U.S. forces are committed in the Republic of Vietnam.”<sup>118</sup> However, the Embassy in Saigon was not aware of Nixon’s decision to extend the deadline past December 1, 1971 and was frustrated at the contradictory recommendations of the State Department and the Department of Defense.<sup>119</sup>

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<sup>115</sup> John K. Wilhelm to Mr. Gathright and Mr. Biltchik, “Herbicides in Vietnam, August 25, 1971,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 2, File: POL 27-10 Herbicides: Jan.-March 1972.

<sup>116</sup> Saigon Embassy to Rogers, “Defense Department Plan for Vietnamization of Herbicides, August 7, 1971,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 4, File: Copies of Documents Retrieved from Saigon’s Post Files (76F23).

<sup>117</sup> Spiers/Green/Cargo to Rogers, “Vietnamization of the Herbicide Program, September 16, 1971,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 1, File: Laws of War: Defoliation (Vietnam), folder 2 of 2.

<sup>118</sup> Rogers Memo to Nixon, “Use of Herbicides in the Republic of Vietnam, November 18, 1971,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 4, File: Copies of Documents L/EA “Law of War” folder 2 of 2.

<sup>119</sup> Stephen Winship (Saigon Embassy) to Josiah Bennett (Dept of State, Vietnam Working Group), “Cable, December 29, 1971,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 2, File: POL 27-10 Herbicides Jan.-March 1972.

While the Department of Defense continued to argue that herbicides were militarily effective and a useful deterrent, the State Department noted that it was difficult to extrapolate the effectiveness of herbicide operations in Vietnam to future conflicts in other environments.<sup>120</sup> Kissinger noted that there was no basis to judge the military utility of herbicides and whether they should continue to be part of the U.S. arsenal. And by January of 1972, the U.S. State Department explicitly argued that herbicides had no military value and the U.S. government “should make special efforts to prohibit [herbicide] use in the future for crop destruction.”<sup>121</sup>

Yet on February 14, 1972, the executive branch gave the U.S. military the authority to supply herbicides to the GVN until an alternative supply channel could be established and allowed for the transfer of helicopter spray systems. The U.S. encouraged the GVN to find commercial sources of herbicides because it would not make an open-ended commitment due to political and fiscal restraints.<sup>122</sup> Although the herbicides were only to be used around U.S. bases, the Embassy continued to worry about how to monitor compliance.<sup>123</sup>

President Nixon’s support for environmental protection measures waned over the course of 1971, and by 1972 he fully allied himself with the agricultural and chemical

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<sup>120</sup> State Dept. Memo to Kissinger, “Draft of NSSM 112, December 29, 1971,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 3, File: POL 27-12 Herbicides, Oct.-Dec. 1971.

<sup>121</sup> “Memorandum From the Executive Secretary of the Department of State (Theodore L. Eliot Jr.) to the President’s Assistant for National Security Affairs (Kissinger), Washington, January 14, 1972,” Foreign Relations of the United States, 1969–1976, Volume E–2, Documents on Arms Control and Nonproliferation, 1969–1972, Document 249.

<sup>122</sup> Kissinger Memo to Laird and Rogers, “NSDM 152: Herbicides in Vietnam and NSDM 141, February 14, 1972,” DNSA, Presidential Directives, Item #: PD01268.

<sup>123</sup> Josiah Bennett to Sullivan, “NSDM 152 on Herbicides in Vietnam, February 15, 1972,” National Archives: College Park, MD, RG 59, Records Relating to Agent Orange (Special Collection) 1961-1974, Box 2, File: POL 27-10 Herbicides: Jan.-March 1972.

manufacturing industries against further environmental regulation. The Senate continued its refusal to ratify the Geneva Protocol according to his interpretation that excluded herbicides from the scope of its jurisdiction.

In 1974, President Gerald Ford renounced the first use of riot control agents and herbicides but did not alter the U.S. position on the scope of the Geneva Protocol. Ford wanted to ratify the Protocol, and was willing to concede to the Senate by renouncing the first use of herbicides as a matter of national policy.<sup>124</sup> The Senate ratified the Geneva Protocol according to the Administration's interpretation, and Ford issued Executive Order 11850 to explicitly state U.S. policy on the military use of herbicides.

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<sup>124</sup> Henry Kissinger, "NSDM 279: Geneva Protocol of 1925 and Riot Control Agents and Chemical Herbicides, November 2, 1974," *DNSA*, Presidential Directives Part II, Item #: PR00226.

## **CHAPTER FIVE: Agent Orange after the Vietnam War.**

After the United States ended its official combat role in South Vietnam, the U.S. military struggled over what to do with its remaining stocks of Agent Orange. The U.S. Air Force stored the majority of the leftover stocks of Agent Orange at a naval storage facility in Gulfport, Mississippi and on Johnston Island in the South Pacific. The U.S. Air Force wanted to dispose of surplus Agent Orange stocks quickly due to the economic cost of storing and maintaining the barrels. Since Agent Orange corroded the metal barrels, it had to be repackaged on a regular basis.

The Air Force initially planned to incinerate its stock of Agent Orange in Deer Park, Texas and Sauget, Illinois, but protests from local representatives stymied this effort. The next option was to have a private drilling company bury leftover stocks in an underground pipe in southern New Mexico, but the New Mexico Water Quality Control Commission refused to approve the plan.<sup>125</sup> Two private hazardous waste disposal companies attempted to bury the 800,000 surplus gallons of Agent Orange in a landfill in West Covina, California. However, the health departments in both states refused to approve the plan due to fierce criticism from the communities near the proposed landfills.<sup>126</sup>

Embassy telegrams frequently mention the possibility of re-selling portions of the U.S. government's stock of Agent Orange that had low levels of dioxin.<sup>127</sup> In April 1972, the Air Force negotiated with Blue Spruce International and the International Research

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<sup>125</sup> James Rowen, "Dumping 'Agent Orange,'" *The New Republic*, June 24, 1972, p. 10-11.

<sup>126</sup> Kevin Roderick, "Toxic Herbicide Dumping Balked," *Los Angeles Times*, September 2, 1976, p. D1.

<sup>127</sup> Telegram from Secretary of State to Brazil and Venezuela Embassy, "Herbicide Orange, July 29, 1974," RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1974STATE164121.

Institute, a nonprofit funded the Rockefeller Foundation, to sell left-over supplies of Agent Orange to South American nations through private channels. Representatives from Blue Spruce approached the governments of Brazil, Colombia, Venezuela, and Surinam.<sup>128</sup>

Venezuela requested 800,000 gallons of Agent Orange in December 1972, but withdrew its request six months later “because there is apparently some risk to human and animal life from the use of this herbicide.”<sup>129</sup>

In an interview with the *New York Times*, Jerome F. Harrington of the International Research Institute heralded the sale of Agent Orange to South and Central American nations “in the name of international development and improving the U.S. balance of payments,” emphasizing that “it would be developing markets... we’re beating swords into plowshares.”<sup>130</sup>

While noting that there were no legal prohibitions on the export of Agent Orange, the U.S. decided as a matter of national policy to ban exports until the EPA approved Agent Orange for domestic use.<sup>131</sup> When told that commercial exportation of Agent Orange required EPA approval, Blue Spruce International suggested the sale of Agent Orange through non-profit agricultural aid programs, specifically USAID.<sup>132</sup>

Representatives from International Research Institute claimed that the donation of

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<sup>128</sup> Alvin L. Young, *The History of the US Department of Defense Programs for the Testing, Evaluation, and Storage of Tactical Herbicides*, Office of the Under Secretary of Defense: Arlington, VA, 2006.

<sup>129</sup> Telegram from Caracas Embassy to State Department, “Venezuela withdraws request for Herbicide Orange, July 17, 1973,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1973CARACA06138.

<sup>130</sup> “Herbicides: Agent Orange Stockpile May Go to the South Americans, *Science*, April 6, 1973, p. 43.

<sup>131</sup> Telegram from Secretary of State to Brazil and Venezuela Embassy, “Herbicide Orange, July 29, 1974,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1974STATE164121.

<sup>132</sup> Anthony Tucker, “Deal sought for surplus poison,” *The Guardian*, April 6, 1973, p. 4.

Agent Orange stocks would help poor Latin American compete with increasingly large-scale agricultural production by giving them access to herbicides to increase agricultural yields.<sup>133</sup>

U.S. military strategists applied herbicidal tactics to international crop eradication programs, and the U.S. State Department advertised the use of herbicides as a method to stem the foreign supply of illegal drugs. A Mexican inter-agency review of the possibility of buying the herbicides emphasized the political sensitivity of the issue, specifically asking U.S. Embassy representatives if the chemicals used would resemble those used in Vietnam.<sup>134</sup> Echoing the Nixon administration's inaccurate claim that Agent Orange was used domestically, the State Department told the Mexican government that the herbicides were available as commercial products in the United States and worldwide.<sup>135</sup>

However, Mexican officials "did not give [the American Embassy] any grounds for hope" that the government would approve of the program.<sup>136</sup> The embassy requested that President Nixon personally discuss an extension and expansion of the herbicide program with Attorney General Ojeda Paullada and President Echeverria, but emphasized the need to carefully craft the pitch. The Attorney General Ojeda stressed

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<sup>133</sup> Dana Adams Schmidt, "Unloading leftover defoliants," *The Christian Science Monitor*, April 27, 1973, p. 1.

<sup>134</sup> Telegram from Mexican Embassy to Secretary of State, "Narcotics: Herbicide Research Project, April 11, 1973," RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1973MEXICO02420.

<sup>135</sup> Telegram from Secretary of State to Mexico Embassy, "Narcotics: Herbicide Research Project, April 12, 1973," RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1973STATE068410.

<sup>136</sup> Telegram from Mexico Embassy to State Department, "Narcotics Control, June 20, 1973," RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1973MEXICO04434.

that he did not want to threaten “the ecological cycle in general,”<sup>137</sup> and was particularly concerned that the use of herbicides associated with the Vietnam War would inflame public opinion.

The American Embassy in Mexico advised Washington to “constantly bear in mind Ojeda’s political sensitivities” in State Department meetings with President Echeverria. Embassy representatives believed that only President Echeverria could override the Attorney General Ojeda’s aversion to the herbicide program. In 1974, the U.S. State Department sent USDA experts to convince the Mexican government that Agent Orange had limited health and political risks because they only affected selected crops.<sup>138</sup>

However, the EPA denied the registration of Agent Orange for export in 1974 and the U.S. State Department offered an alternative herbicide for Mexico’s crop eradication program—paraquat. Paraquat would be dispersed by airplanes and helicopters, the same method used in Vietnam. State Department officials assured the Mexican government that paraquat had no long-long side effects and that product safety “labels often overstate the potential harmful impact of herbicides...in order to protect the manufacturer because he has not had time nor money to run all conceivable tests.”<sup>139</sup>

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<sup>137</sup> Telegram from Mexico Embassy to State Department, “Meeting with Mexican Attorney General, September 28, 1973,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1973MEXICO07362.

<sup>138</sup> Telegram from Mexico Embassy to State Department, “Herbicide Research Project, April 26, 1974,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1974MEXICO03504.

<sup>139</sup> Telegram from State Department to Mexican Embassy, “Herbicides for Poppy Eradication, March 21, 1975,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1975STATE064195.

Following media criticism, the Mexican government held a press conference defending the use of herbicides, stating that the herbicide program had been authorized by the Secretary of Agriculture that “if we would [have] use[d] a non-approved herbicide we would be criminals... we could not combat one crime by committing another.”<sup>140</sup>

Since the public response to the herbicide program was critical at best, U.S. Embassy officials emphasized the need for the Mexican President to explain it “as an entirely Mexican program using chemical agents already in extensive commercial use.”<sup>141</sup> The U.S. government hoped to avoid formal diplomatic communication regarding drug control measures, proposing that the Mexican government purchased paraquat through a private chemical manufacturing company in the United States.<sup>142</sup> By 1976, Evergreen International and the Ford Foundation funded the Mexican drug crop eradication program directly, and U.S. AID reimbursed them.<sup>143</sup> The Mexican herbicide program and institutional form served as the model for future crop eradication programs.

However, marijuana consumers in the United States began to suffer from symptoms related to paraquat poisoning, provoking a Congressional debate regarding the use of paraquat on drug crops sent to the United States for consumption. When the CDC,

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<sup>140</sup> Telegram from State Department to U.S. Mission in Geneva, “Press Conference on Herbicides, January 9, 1976,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1976STATE005410.

<sup>141</sup> Telegram from Mexico Embassy to State Department, “Conversations with Mexican Attorney General, November 11, 1975,” RG 59, Central Foreign Policy Files, 1973 - 1976. Document #: 1975MEXICO09913.

<sup>142</sup> Telegram from Mexican Embassy to State Department, “AG Equipment/Services Requirements for Eradication/Interdiction Campaign, January 12, 1976,” RG 59, Central Foreign Policy Files, 1973 – 1976. Document #: 1976MEXICO00342; Telegram from Secretary of State to U.S. Mission in Geneva, “Call on Mexican Attorney General, November 7, 1975,” RG 59, Central Foreign Policy Files, 1973 – 1976. Document #: 1975STATE264529.

<sup>143</sup> Mexican Embassy to Sec. of State, January 12, 1976, AG EQUIPMENT/SERVICES REQUIREMENTS FOR ERADICATION, Document #: 1976MEXICO00342.

Department of HEW, and the National Institute for Environmental Health Sciences concluded that paraquat was harmful to human health in April 1979, Congress suspended U.S. support for aerial fumigation programs in Mexico. In 1979, the Foreign Aid Bill prohibited U.S. support for fumigation programs with what is now known as the Percy Amendment (Amendment to Section 481 of Foreign Aid Bill). The suspension of military aid for crop eradication ended in 1982, and herbicide programs based on the 1970s Mexican model were extended to multiple Southern and Central American nations, and aerial crop eradication programs were established in Burma, Guatemala, Belize, Colombia, and Jamaica under the supervision of the U.S. Agricultural Research Service.

After exploring several alternatives, the U.S. Air Force decided to incinerate the remaining supplies of Agent Orange. They contacted a private hazardous waste company to transport and incinerate Agent Orange at sea near Johnston Island in the South Pacific. The incineration process occurred during the summer of 1977, but the U.S. Air Force took a markedly different approach from the Vietnam War in its safety procedures. Incineration personnel wore protective clothing, masks with respirators, goggles, and personal monitoring devices during the handling and transport of Agent Orange.<sup>144</sup>

On March 1<sup>st</sup>, 1979, the EPA issued its very first emergency ban when it suspended all uses of 2,4,5-T. Ed Johnson, the EPA Pesticides Chief, assured the press that the EPA had carefully considered the costs but alarming evidence of

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<sup>144</sup> Alvin L. Young, *The History of the US Department of Defense Programs for the Testing, Evaluation, and Storage of Tactical Herbicides*, Office of the Under Secretary of Defense: Arlington, VA, 2006, p. 72.

miscarriages and birth defects in prompted its decision. The Assistant Administrator of the EPA, Steven Jellinek, remarked rather crudely that “we have dead fetuses,”<sup>145</sup> and that cancellation hearings for 2,4,5-T, initiated in April of 1978, would take at least two more years to conclude. The ban was to remain in effect until the EPA completed its study on the long-term health effects of exposure to herbicides.<sup>146</sup>

Dow’s Vice-President, Ethyl Blair, declared that the ban was “a political move...there has never been a single documented incident of human injury resulting from normal agricultural use of these products.”<sup>147</sup> Dow’s President, David Rooke, emphasized the significance of the emergency measure, insisting that “this is only one battle in a much larger war that can affect every product industry makes. If you can wipe a product with this much proven safety off the market, then what is safe?”<sup>148</sup>

In a 1979 Congressional hearing, Representative Martin Russo (D-IL) underscored the symbolic significance of the debate on the toxicity of Agent Orange, noting that the Veteran’s Administration’s claim that there was no conclusive scientific research on the health effects of Agent Orange was an attempt “to wipe out the thought of the whole war.”<sup>149</sup>

As the 1970s drew to a close, chemical manufacturing companies faced increased criticism regarding Agent Orange. Vietnam veterans’ lawsuits and Congressional

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<sup>145</sup> Margot Hornblower, “Emergency Ban Is Ordered for 2 Weed Killers,” *Washington Post*, March 2, 1979, p. A1 and A4.

<sup>146</sup> Robert D. McFadden, “E.P.A., Citing Miscarriages, Restricts 2 Herbicides,” *New York Times*, March 2, 1979, p. A10.

<sup>147</sup> Margot Hornblower, “Emergency Ban Is Ordered for 2 Weed Killers,” *Washington Post*, March 2, 1979, p. A1 and A4.

<sup>148</sup> Margot Hornblower, “Dow Blasts EPA Ban on Herbicide,” *Washington Post*, March 10, 1979, p. A3.

<sup>149</sup> Margot Hornblower, “A Sinister Drama of Agent Orange Opens in Congress,” *Washington Post*, June 27, 1979, p. A3.

hearings compelled Monsanto and Dow to initiate a public relations campaign to specifically counter claims that they knowingly sold hazardous products.

Monsanto's explanation presented an interesting interpretation of the chemical industry's relationship to the U.S. military during the Vietnam War. In a widely circulated press background report, Monsanto claimed that it made Agent Orange at the U.S. government's request and according to government specifications, but "the government did not seek our advice on the appropriateness of its plans nor did it tell us how or in what concentrations it intended to use the herbicide mixture... [Agent Orange] was applied by U.S. military personnel in wartime situations...utterly beyond our control."<sup>150</sup> Although dioxin was "unintentionally formed" as a result of the chemical manufacturing process, Monsanto emphasized that the U.S. government took title and possession of the herbicides at their U.S. factory sites and was fully responsible for shipping them to Vietnam. To support its abdication of responsibility, Monsanto the specific chemical composition of Agent Orange was never registered with the Department of Agriculture (under the Federal Insecticide, Fungicide, and Rodenticide Act) but was produced according to the U.S. military's regulations. Stressing that Agent Orange was a "highly emotional public issue," Monsanto hoped "that good science will ultimately prevail over the emotions of the moment."<sup>151</sup>

More recently, aerial spraying of herbicides has experienced a revival as part of Plan Colombia to destroy coca crops. Starting in 2000, the United States funded the escalation of crop eradication programs by providing small aircraft and herbicides to the

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<sup>150</sup> Dan R. Bishop (Director, Environmental Communications at Monsanto), "Monsanto Backgrounder: Agent Orange, November 1, 1983," Item #: 2520305004, Paul Cecil Collection, The Vietnam Center and Archive, Texas Tech University.

<sup>151</sup> *Ibid.*

Colombian National Police.<sup>152</sup> Known as Plan Colombia, the Colombian National Police aerially sprays glyphosate—the chemical in the commercial herbicide Roundup—on poppy and coca plants. Reports of human health effects closely parallel accounts given during the Vietnam War, mentioning skin rashes and itches, fevers, and eye infections. The herbicides do not only kill drug crops, but also livestock, fish, and a variety of secondary crops. Much like the U.S. military in Vietnam, the Colombian government prohibits ground investigations and has not revealed the chemical composition of the herbicides used.<sup>153</sup>

The American and Colombian governments insist that aerial sprays are safe because they follow precise geographic coordinates. However, the problem of chemical drift is still severe, so much that Senator Paul Wellstone was directly sprayed during a demonstration of the program while visiting Colombia in 2001.<sup>154</sup>

The European Union has not only withheld its support for aerial fumigation programs, but has publically declared its opposition to them. In February 2001, the European Parliament resolved that:

“Plan Colombia contains aspects that run counter to the cooperation strategies and projects to which the EU has already committed itself and... [the European Union] must take the necessary steps to secure an end to the large-scale use of chemical herbicides... given the dangers of their use to human health and the

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<sup>152</sup> Rachel Massey, “The ‘Drug War’ in Colombia: Echoes of Vietnam,” *Journal of Public Health Policy* 22, no. 3 (2001): 280.

<sup>153</sup> Sue Branford, “Victims of a secret chemical war,” *New Statesman*, October 24, 2005, p. 17.

<sup>154</sup> Rachel Massey, 282.

environment alike.”<sup>155</sup>

However, there has not been a reduction in the cultivation of drug crops.<sup>156</sup> The continuation of drug fumigation efforts despite their operational failure suggests that they serve interests beyond drug control.<sup>157</sup> Chemical manufacturers market toxic chemicals prohibited within the United States in nations without environmental protection laws or regulatory policies to oversee the risk of negative health or environmental effects.

In March 2008, Ecuador filed a claim with the International Court of Justice against Colombia. Ecuador claimed that the aerial spraying of toxic herbicides damaged crops, the water supply, and the environment in communities located near the Colombian border. Ecuador cited the “non-discriminating nature” of the aerial herbicide program, noting that border populations suffered itchy eyes, skin sores, intestinal bleeding, and death following spray missions and that crops such as yucca, rice, coffee, and plantains died in addition to drug crops.<sup>158</sup> The similarity between this description of Ecuador’s experience with herbicides and the conditions seen in the Vietnam War demonstrates how scientific knowledge and legal regulations remain mired in the same assumptions of the 1960s.

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<sup>155</sup> European Parliament resolution on Plan Colombia and support for the peace process in Colombia, B5-0087/2001, 1 February 2001. The resolution passed 474 to 1.

<sup>156</sup> Office of National Drug Control Policy, *2004 Coca and Opium Poppy Estimates for Colombia and the Andes*, March 25, 2005.

<sup>157</sup> Transnational Institute, “The politicization of fumigations: Glyphosate on the Colombian-Ecuadorian Border,” Drug Policy Briefing no. 20 (February 2007): 1.

<sup>158</sup> Ministerio de Relaciones Exteriores, República del Ecuador, *Application Instituting Proceedings*, March 31, 2008, p. 5-6.

## **CONCLUSION.**

In 2004, the Vietnam Association for Victims of Agent Orange (VAVA) filed a class action lawsuit against Dow Chemical Company, Monsanto, and thirty-five other chemical manufacturers for war crimes. Over four million Vietnamese nationals were represented in the lawsuit. VAVA sought compensation under the Alien Tort Claims Statute, claiming that herbicides were prohibited weapons according to customary international law and several international agreements.<sup>159</sup>

Judge Jack Weinstein, the same judge who presided over the \$180 million settlement between U.S. veterans and the chemical manufacturers of Agent Orange in 1984, ruled that the U.S. was not party to any international agreements banning the use of herbicides during the time they were used in Vietnam and consequently herbicide manufacturers were not liable for personal injury.<sup>160</sup>

Judge Weinstein's opinion in the VAVA case demonstrates how definitions and classifications affect how legal and scientific discourses account for the environmental and health effects of Agent Orange. While he defines a herbicide as "an agent used to destroy or inhibit plant growth," his definition of poison—"a substance that through its chemical action kills, injures or impairs an animal organism"<sup>161</sup>—clearly excludes its applicability to the environment. According to Judge Weinstein, the U.S. military and chemical manufacturers only intended to kill plants, not harm human health. Agent

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<sup>159</sup> VAVA argued that herbicide operations during the Vietnam War violated Article 23 of the Annex to the 1907 Hague Convention IV, the 1925 Geneva Protocol, the 1949 Geneva Convention Relative to Protection of Civilian Persons in Time of War, and the Charter of the International Military Tribunal that established the guidelines for the Nuremburg trials.

<sup>160</sup> Weinstein concluded that that the 1907 Hague Regulations could not be applied to herbicides because "poison" was not a definable concept and that the 1925 Geneva Protocol only applied to gases that had immediate effects on human health. Judge Weinstein also rejected any appeal to customary international law's principle of proportionality because it was an ambiguous concept.

<sup>161</sup> 373 F. Supp. 2d 7, \*18; 2005 U.S. Dist. LEXIS 3644, \*\*11; CCH Prod. Liab. Rep. P17, 342, p. 43.

Orange was "sprayed as small droplets, not as a gas,"<sup>162</sup> and therefore could not be considered poison Human health issues were only a "side-effect"<sup>163</sup> of exposure to herbicides.

He also argued that a "highly toxic herbicide' may be characterized as both a poison and an herbicide, depending on design and degree."<sup>164</sup> His prior distinction between herbicides and poisons based on the species targeted no longer held, and toxicity established conceptual overlap between targeting the environment and targeting animal life. Weinstein tacitly acknowledged that toxic chemicals in the environment affect animal, i.e. human, health.

the distinction between the military use of herbicides contaminated with a significant amount of dioxin and prohibitions against the use of chemical weapons involves "a peculiar American way of dissecting an issue to avoid domestic and global culpability."<sup>165</sup>

Even if herbicides are a legitimate and legal weapon of war, it is essential to ask what utility herbicides had in establishing a legitimate, non-communist government in South Vietnam. Civilian and military officials warned that the use of herbicides could serve as a useful propaganda tool for the NLF, rallying support based on anger over crop destruction and desire for compensation. Even if one only considers the military strategy behind herbicide operations, herbicides destroyed the food supply rather than

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<sup>162</sup> Vietnam Ass'n for Victims of Agent Orange/Dioxin v. Dow Chem. Co. (In re "Agent Orange" Prod. Liab. Litig.), 373 F. Supp. 2d 7, 40-41(E.D.N.Y. 2005): 43, quoted in Aviva Zierler, *Temple International and Comparative Law Journal* 21 (Fall 2007): 496-497.

<sup>163</sup> Vietnam Ass'n for Victims of Agent Orange/Dioxin v. Dow Chem. Co. (In re "Agent Orange" Prod. Liab. Litig.), 373 F. Supp. 2d 7, 40-41(E.D.N.Y. 2005): 103.

<sup>164</sup> 373 F. Supp. 2d 7, \*18; 2005 U.S. Dist. LEXIS 3644, \*\*11; CCH Prod. Liab. Rep. P17, 342, p. 43.

<sup>165</sup> BTPL 294.

weakening the NLF.<sup>166</sup> U.S. political and military planners were “trapped in a mindset which treat the war as a purely technical problem to be solved through overwhelming application of matériel according to a scientific methodology.”<sup>167</sup>

The continuing significance, and controversy, of the use of Agent Orange during the Vietnam War is clearly evident from embassy cables published by Wikileaks. In a discussion of why the United States and Vietnam have not agreed on the health effects of Agent Orange, a U.S. diplomat noted that:

“Vietnam [continues] to argue that over three million handicapped can trace their disabilities to dioxin exposure. We do not believe that this figure can be supported by scientifically sound data and analysis. Statements that describe every child born with a birth defect anywhere in Vietnam as a ‘victim of agent orange’ are common and remain a favorite propaganda tool for persons opposed to closer U.S.-Vietnam relations.”<sup>168</sup>

The tone of the U.S. position is eerily similar to that expressed during the Vietnam War. There has never been a large-scale epidemiological study of the Vietnamese population regarding the health effects of Agent Orange. It is unlikely that scientific research will ever come to a consensus on the environmental and health effects of Agent Orange. The problem of causation and disagreements over research methods preclude any meaningful scientific conclusion. Scientific research requires equipment,

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<sup>166</sup> Hay, 76.

<sup>167</sup> Antone Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity* (New York: Columbia UP, 2009): 157.

<sup>168</sup> Embassy Hanoi to State Department, “SCENESETTER FOR VISIT BY OES ASSISTANT SECRETARY JONES TO VIETNAM, February 24, 2010,” <http://cablesearch.org/cable/view.php?id=10HANOI218&hl=dioxin>.

technical training, and the political will to actually act on new knowledge and information. While cost is a significant factor in the lack of medical research, the potential findings of an epidemiological study carry immense political implications.<sup>169</sup> Regardless of the economic and scientific difficulties, political considerations continue to be the primary impediment to the comprehensive examination of the legacy of U.S. herbicide operations in South Vietnam.

The history of Agent Orange foregrounds the extent to which military and governmental policies failed to take long-term biological and environmental change into account. As Rachel Carson observed in 1962 of the pesticide industry, there was a “distorted sense of proportion”<sup>170</sup> in analyzing the immediate benefits of chemical products and the long-term consequences of their use. Exacerbating the flawed perspective was the assumption that environmental conditions could be completely divorced from the social, economic, political, and cultural context of human life.

Yet the environment links generations through time and encompasses the entire globe. Even if ethical and legal norms have not convinced the U.S. government to accept responsibility for the effects of Agent Orange in Vietnam, the long-term consequences of extensive exposure to toxic synthetic chemicals must be addressed to prevent future environmental degradation. Increased knowledge about complex ecological interactions underscores the fact that the environment and human society shape one another. Ironically, U.S. military action in Vietnam tacitly affirmed this conception of the environment by employing a strategy that used environmental damage to alter political behavior.

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<sup>169</sup> Michael Martin. CRS Report for Congress, “Vietnamese Victims of Agent Orange and U.S.-Vietnamese Relations,” November 21, 2008, Order Code: RL34761, p. 10.

<sup>170</sup> Rachel Carson, *Silent Spring* (Boston: Mariner, 2002), 8.

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