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The Aerial Eradication of Illicit Coca Crops in Colombia, South America: Why the United States and Colombian Governments Continue to Postulate Its Efficacy in the Face of Strident Opposition and Adverse Judicial Decisions in the Colombian Courts

by

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I. INTRODUCTION

The Republic of Colombia is a nation in the thrall of a paradox.¹ Colombia boasts one of the strongest democratic traditions in all of Latin America, yet it struggles with continuous political violence and terrorism.² At the center of this political violence and civil unrest lies the guerrilla and paramilitary groups.³ These two rebel factions wield incredible power, rooted in the economically-lucrative illicit drug trade.⁴ In 1999, in an effort to counteract the destructive effects of the illicit drug trade and its accompanying deleterious societal implications, the Government of Colombia ("GOC") enacted Plan Colombia with assistance from the U.S. Department of State ("DoS").⁵ One of the major components of Plan Colombia calls for the increased aerial eradication of illicit drug crops.⁶ In fact, Colombian President Alvaro Uribe on a trip to Washington in April 2003 "emphasized his commitment to complete elimination of Colombia's coca crops by the end of his term."⁷ In theory, Plan Colombia's illicit drug trade eradication component is a commendable governmental attempt to end forty years of internal conflict among the governmental forces, leftist guerrillas, and the right-wing paramilitaries.⁸ However, is the aerial eradication of illicit drug crops, purportedly meant as a way of striking at the lucrative economic base of the rebels, really achievable, or for that matter, effective?⁹

1. Dennis M. Hanratty, *Introduction to COLOMBIA A COUNTRY STUDY*, at xxiii (Dennis M. Hanratty & Sandra W. Meditz eds., 4th ed. 1990).

2. See, e.g., William D. Shingleton, *Understanding Colombia*, 25 FLETCHER F. WORLD AFF. 255, 255-256 (2001).

3. See *id.* at 256.

4. See *id.* at 257.

5. See Luz Estella Nagle, *U.S. Mutual Assistance to Colombia: Vague Promises and Diminishing Returns*, 23 FORDHAM INT'L L.J. 1235, 1269 (2000).

6. *Id.* at 1273.

7. *U.S. Narcotics Control Initiatives in Colombia: Testimony Before the Senate Drug Caucus*, (2003) (statement of Paul E. Simons, Acting Assistant Secretary of State for International Narcotics and Law Enforcement Affairs), available at <http://www.state.gov/g/inl/rls/rm/21203.htm> (last visited Sept. 11, 2003) (noting the DoS recently declared that "[o]ne of Colombia's goals was to reduce coca cultivation by fifty percent by the end of 2006."); *Plan Colombia: Hearing on U.S. Policy Toward Colombia Before the Foreign Relations Comm. & the Western Hemisphere, Peace Corps and Narcotics Affairs Subcomm.*, 108th Cong. (2003) 2003 WL 22463373 (statement of Robert B. Charles, Assistant Secretary of State, Bureau for International Narcotics & Law Enforcement, Department of State).

8. Statement of Paul E. Simons, *supra* note 7.

9. See Shingleton, *supra* note 2 at 257; but see generally Nagle, *supra* note 5.

This Note is an attempt to offer an objective analysis concerning the Republic of Colombia's struggle for economic, civil, and political stability, juxtaposed with the questionable aerial eradication of illicit drug crops and the resultant health and environmental consequences. In so doing, this Note will focus on the following: The overall policy of the United States concerning Colombia; United States support for the aerial eradication program in Colombia, past and present; an analysis of the initial DoS report on the aerial eradication program, as mandated by Congress; and, an analysis of the health and environmental arguments presented by those in opposition to Colombia's program. A preliminary effort to provide a contextual understanding of Colombia's past is essential to objectively identifying how the GOC came to believe in the efficacy of an aerial eradication program. With this in mind, a brief historical review of Colombia is in order.

II. COLOMBIA: A NATION DIVIDED

"The independent Republic of Greater Colombia was formed in 1819, [following its declaration of independence from Spain] encompassing what is today Colombia, Venezuela, Ecuador, and Panama."¹⁰ Colombia's consistent democratic governance, evident by a long history of civilian rule and control over the military, has been interrupted only three times since its independence.¹¹ The first interruption occurred in 1830, when a military leader led a successful dictatorship for eight months, again in 1854 by another successful military coup lasting less than one year, and, finally, in 1953, with another short-lived coup by a military general.¹² These coups, while having momentary destabilizing effects, pale in comparison to the historical conflicts between the two dominant political parties.¹³ The inception of consolidated rebel factions currently at play in Colombia can be seen emerging in the early nineteenth century:

The ideological split dividing the political elite began in 1810 and became solidified by 1850 after the official establishment of the Liberal Party (Partido Liberal-PL) and the Conservative Party (Partido Conservador-PC), the two parties that continued to dominate Colombian politics in the 1980s. The Liberals were colonial and wanted to transform [Colombia] into a modern nation. . . . The Liberals also sought lessened executive power; separation of church and state;

10. Shingleton, *supra* note 2 at 255; *see also* Karen M. Sturges-Vera, *Historical Setting: The Founding of the Nation*, in *COLOMBIA A COUNTRY STUDY*, *supra* note 1 at 18-20 (detailing the history of Columbia's independence from Spain).

11. Hanratty, *supra* note 1 at xxiii.

12. *Id.*

13. *See id.* at xxiii, xxiii-xxix.

freedom of press, education, religion, and business; and elimination of the death penalty. The Conservatives wanted to preserve the Spanish colonial legacy of Roman Catholicism and authoritarianism. They favored prolonging colonial structures and institutions, upholding the alliance between church and state, continuing slavery, and defending the authoritarian form of government that would eliminate what they saw as excesses of freedom.¹⁴

Tension between the two parties continued for years, with the PC remaining united while the PL began to splinter into multiple factions almost from the beginning.¹⁵ For the next century, years of political turmoil between the two parties further polarized emerging factions, especially within the PL, culminating in a violent conflict following the transfer of power from the Liberals to the Conservatives in 1946.¹⁶ “*La violencia*,” as this period of undeclared civil war between the Liberals and Conservatives is known, witnessed the killing of more than 200,000 people during the eighteen years following the power transfer.¹⁷ In an attempt to control this violence, the Conservative government cracked down on the Liberals, and the backlash to the overbearing centralization of Conservative power saw the last successful military coup come to fruition in 1953.¹⁸ Eventually both parties restored the peace, but *la violencia* would have dire consequences on modern Colombia and its fight against rebel political factions and the illicit drug trade.¹⁹

La violencia, having created political disenchantment within the ultra-liberal factions, bred new civil and political animosity in the form of guerrilla activity:

In 1964 the National Liberation Army [“ELN”] was formed by students who were disenchanting with the pro-Soviet Communist Party of Colombia [PCC] . . . and inspired by the Cuban Revolution. . . . In 1966 another guerrilla movement – the Revolutionary Armed Forces of Colombia [“FARC”] . . . began operating and was officially designated as a branch of the PCC. . . . In 1968 . . . [another] guerrilla group – the Popular Liberation Army [“EPL”] . . . was formed as the armed branch of the Communist Party – Marxist-Leninist [PCC] . . . a pro-Chinese group.²⁰

The FARC and the ELN, currently the two most dominant guerrilla groups, were forced to find additional sources of financing once Cuba ended its

14. Sturges-Vera, *supra* note 10 at 22-23.

15. *See id.*

16. *Id.*

17. *Id.*

18. *Id.* (relating the events leading up to the coup).

19. *See id.* (detailing the peace process and the rise of drug cartels).

20. *Id.* at 44-45.

aid to them during the last decade.²¹ “Kidnapping and taxation of narcotics production quickly replaced Cuban support . . . and growing anger at the government’s inability to handle the rebels led some landowners and others in Colombia to form paramilitary groups to fight the guerrillas.”²² However, these right-wing paramilitary groups captivated by the financial incentive offered by the illegal drug trade have become as much a part of the drug trade problem as the FARC or the ELN.²³ Even worse, political corruption, a storied part of Colombia’s tradition, seems to be thriving in the form of governmental collusion with the paramilitaries, and even guerrilla groups, all serving to exacerbate Colombia’s predicament.²⁴ With the FARC now controlling nearly 40% of Colombia and the drug interdiction dilemma associated with the rebel factions, it is no wonder Colombia received an instability index rating of 68.02 by the National Defense Council Foundation in 2000.²⁵ This rating makes Colombia the most unstable state in South America, and second only to Haiti in the entire Western Hemisphere.²⁶

Given the chaotic political history of Colombia, its continual bouts with political factions in the form of rebels groups, and the convoluted effects of the illegal drug trade, one has to ask what exactly the United States’ role is in this matter. It is with that question in mind that an understanding of United States policy toward Colombia, past and present, is necessary.

III. REBELS AND TERRORISM: UNITED STATES POLICY TOWARDS COLOMBIA

A. *Why Colombia Matters*

“In 2001 at the Quebec Summit of the Americas, President Bush and the [thirty-three] other elected leaders of the hemisphere, forged a common vision of democratic governance and free trade.”²⁷ The United States supports the GOC’s efforts to strengthen its democratic institutions by promoting a respect for human rights and the rule of law, by intensifying the counter-narcotics efforts, and by

21. See Shingleton, *supra* note 2 at 256 (discussing the emergence of the FARC and ELN in Colombia).

22. *Id.*

23. *See id.*

24. *See* Nagle, *supra* note 5 at 1287.

25. *See* Shingleton, *supra* note 2 at 256-57 (2001).

26. *Id.* at 256.

27. SEC’Y OF STATE, A REPORT TO CONGRESS ON UNITED STATES POLICY TOWARDS COLOMBIA AND OTHER RELATED ISSUES (Feb. 3, 2003), *available at* <http://www.state.gov/p/wha/rls/rpt/17140pf.htm>.

ending the link between the rebel groups, narcotics trafficking, and terrorism.²⁸ The war on terrorism has provided a basis for rejuvenated efforts to support the GOC because of the tactical methodologies (i.e. murder, kidnapping, extortion, and bombings) employed by the illegally-armed rebel groups.²⁹ In fact, the DoS refers to the illegally-armed groups of narcotics traffickers and terrorists as “one in the same.”³⁰

Colombia is responsible for 75% of the world’s cocaine production with 90% of all the cocaine entering the United States being either produced in or passing through Colombia.³¹ There were an estimated 50,000 drug-related deaths in the United States in 2000, while the U.S. economy took a \$160 billion hit in the same year due to the illicit drug trade.³² Rebel terrorists in Colombia have killed and kidnapped thousands of Colombians with the FARC and ELN being among the groups responsible.³³ While terrorism and the desire for the cessation of illegal narcotics smuggling is paramount in importance, other factors warrant the support of the United States.³⁴

Colombia, with a land area four times the size of California and a population of more than forty million, engages in substantial trade with the United States, totaling more than \$11 billion, as of 2001.³⁵ Colombia is the eighth largest supplier of crude oil to the United States and accounts for two-thirds of the fresh-cut flower market, which supports 200,000 jobs in the United States.³⁶ Combine this large economic relationship with more than \$4 billion in direct U.S. investment, in areas such as Colombia’s important reservoirs of petroleum, natural gas, and coal, and one understands the potential for greater economic impact a stable Colombia could offer.³⁷ Still, the United States firmly believes Colombia’s illicit drug trade used by the three most powerful rebel “terrorists,” which are the FARC, ELN, and the relatively new rebel group, the United Self-Defense Forces of Colombia (“AUC”), to support their respective operations, must be eradicated

28. *Id.*

29. *See id.*

30. *See id.*

31. *See id.*

32. *Id.*

33. *See id.*

34. *See generally id.*

35. *Id.*

36. BUREAU OF W. HEMISPHERE AFFAIRS, U.S. DEP’T OF STATE, WHY AMERICANS SHOULD CARE ABOUT PLAN COLUMBIA (Feb 21, 2001), available at <http://www.state.gov/p/wha/rls/fs/2001/1040pf.htm> (last visited Oct. 21, 2004).

37. *See* A REPORT TO CONGRESS ON UNITED STATES POLICY TOWARDS COLOMBIA AND OTHER RELATED ISSUES, *supra* note 27.

if any real progress in the way of positive economic and social change is to be achieved.³⁸

To achieve the goals of economic and social change in Colombia, the United States strongly supports Plan Colombia, started by former President Pastrana and continued by President Uribe.³⁹ Plan Colombia, which was developed, approved, and implemented by the GOC, was initially a three-year plan estimated at \$7.5 billion.⁴⁰ Colombia is responsible for \$4 billion of the total cost, while the United States was slated to deliver a \$1.3 billion assistance package.⁴¹ However, since 2000, the United States has given Colombia \$1.7 billion in economic, humanitarian, and security assistance with another \$600 million for FY 2003, which is far more than the GOC initially requested.⁴² In fact, during the past fifteen years, the United States has provided Colombia with more than \$3.6 billion in assistance.⁴³ Why does the United States open up its coffers in such a dedicated fashion? The DoS explains:

What is occurring in Colombia matters to the United States. We stand in solidarity with the people of Colombia, who, like us, know first-hand the scourge of terrorism. Although Afghanistan and Iraq currently receive more public attention, our important partnership with Colombia is yet another front on the war on terrorism, and remains a priority of this Administration. With the support of the U.S. Congress, the Administration has devoted considerable monetary resources and personnel to this effort.⁴⁴

The purpose of this Note is not to debate the approach taken by the Executive Branch in placing Colombia within the purview of the war on terrorism. But, one cannot dispute the current Administration's emphasis on winning the war against the guerrilla forces through eradication of the illicit drug trade.⁴⁵

38. *See id.* *See also* Juan Pablo Toro, *First Colombia Militia Begins to Disarm*, YAHOO! NEWS Nov. 25, 2003 (on file with Drake Journal of Ag. Law) (stating in November 2003, the AUC, in a ceremonious occasion, agreed to disarm its 13,000 member force by 2005, amid charges that the GOC was letting high ranking officers off easy instead of arresting them).

39. *See* A REPORT TO CONGRESS ON UNITED STATES POLICY TOWARDS COLOMBIA AND OTHER RELATED ISSUES, *supra* note 27.

40. BUREAU OF W. HEMISPHERE AFFAIRS, U.S. DEP'T OF ST., IS PLAN COLOMBIA A COLOMBIAN PLAN? (2001), at <http://www.state.gov/p/wha/rls/fs/2001/1039pf.htm>.

41. *Id.*

42. *See* Statement of Paul E. Simons, *supra* note 7.

43. *U.S. Policy Toward Colombia: Hearing on Plan Colombia Before the S. Subcomm. on W. Hemisphere, Peace Corps and Narcotics Affairs and S. Comm. On Foreign Relations*, 108th Cong. 5 (2003) 2003 WL 22463373 (statement of Sen. Christopher Dodd, Ranking Member, S. Comm. on Foreign Affairs).

44. Statement of Paul E. Simons, *supra* note 7.

45. *See generally id.*

B. U.S. Policy: Past and Present

According to the DoS, winning the war on terror in Colombia means winning the war on drugs, given the reality that Colombia's terrorist and narcotics problems are intertwined.⁴⁶ The key component of this war on terrorism and drugs is the aerial eradication of illicit drug crops.⁴⁷ Historically, the DoS has expressed optimism that Colombia could effectively eradicate illicit drug crops.⁴⁸ The GOC first started testing aerially-sprayed herbicides with the hope that it would be the first real means of eradicating coca on a major scale.⁴⁹ While aerial spraying of coca was in its infancy in Colombia, aerially-applied herbicidal spray was touted by the DoS as the "most important marijuana development in 1984," when it was used to destroy 3,000 hectares (one hectare is equivalent to 2.471 acres) of marijuana.⁵⁰ In fact, as far back as 1981, Congress statutorily addressed possible health concerns associated with paraquat and other herbicides in use at the time for the marijuana eradication program in Colombia.⁵¹

In 1986, the DoS requested \$32.1 million for Latin America, a 9% increase from the previous year, with particular attention focused on Colombia's herbicide testing and its use in a large-scale aerial eradication spraying program.⁵² Congressional approval for Colombia's aerial spraying program was fully realized with the passage of the comprehensive Anti-Drug Abuse Act of 1986.⁵³ This Act, *inter alia*, appropriated additional funding for international narcotics control.⁵⁴ The Secretary of State was authorized to use at a minimum \$1 million of the funds available for fiscal year 1987 "to finance research on and the development and testing of safe and effective herbicides for use in the aerial eradication

46. *Id.*

47. *Id.*

48. See Jon R. Thomas, *FY 1986 Assistance Requests for Narcotics Control, Address Before the Senate Appropriations Committee* (Mar. 14, 1985), in DEP'T ST. BULL., June 1985, at 62-63.

49. See *id.* at 62.

50. *Id.* at 62; WEBSTER'S UNABRIDGED DICTIONARY OF THE ENGLISH LANGUAGE 885 (2d ed. 2001).

51. See International Security and Development Cooperation Act of 1981, Pub. L. No. 97-103, § 502(3), 95 Stat. 1539 (1981) (amending the foreign Assistance Act to urge the President to develop means of warning persons of the dangers of using marijuana sprayed with paraquat).

52. See Thomas, *supra* note 48 at 62-63; WEBSTER'S UNABRIDGED DICTIONARY OF THE ENGLISH LANGUAGE, *supra* note 50 at 885.

53. See Anti-Drug Abuse Act of 1986, Pub. L. No. 99-570, 100 Stat. 3207, Title II §§ 2001-30 (1986) This Act has been changed by Congress through numerous amendments and repeal of specific provisions.

54. International Narcotics Control Act of 1986, Pub. L. No. 99-570, §2006, 100 Stat. 3207, 3207-64, *repealed by* International Narcotics Control Corrections Act of 1994, Pub. L. No. 103-447, § 103, 108 Stat. 4691, 4694.

of coca.”⁵⁵ This portion of the Act increased Congressional appropriations for international narcotics control for FY 1987 by nearly \$18 million with an additional \$45 million being made available to the president pursuant to certain requirements.⁵⁶ The additional \$45 million also included a provision that aircraft be made available for use in narcotics control eradication throughout Latin America.⁵⁷

In 1987, with complete Congressional authorization, the DoS signaled that Colombia was to meet all the requirements for an aerial herbicidal program against coca and was to commence spraying with a goal of eradicating 8,000 hectares.⁵⁸ The DoS, in asking for continued Congressional support for FY 1988, stated, “[this] request supports a full-fledged aerial campaign against cannabis in Colombia, as well as continuing experiments with aerial eradication of coca”⁵⁹ Throughout the next decade, Congress provided funding for the DoS to use for the eradication effort in Colombia, including a 1998 fiscal appropriations act that contained funding for fiscal years 1999 through 2001.⁶⁰ The fiscal appropriations act of 1998 was substantially augmented in 2000 when Congress enacted legislation approving Plan Colombia and providing massive assistance for its implementation.⁶¹ Years of funding for Colombia’s aerial eradication of coca plants continued without much Congressional oversight, but questions concerning the effectiveness and integrity of the program eventually surfaced.⁶² In late 1997, during a tour of Colombia, the Senate Caucus on International Narcotics Control expressed concerns over the ongoing eradication efforts:

While the eradication mission is increasingly the main focus of U.S. and Colombian efforts, the results have been mixed and difficult to interpret. In 1994, when eradication efforts began to increase, the State Department estimated that the coca crop in Colombia had grown by some 20 percent over 1993, from 40,000 to 49,000 hectares, of which Colombia eradicated almost 5,000. Between 1994 and 1995, the size

55. § 2006, 100 Stat. at 3207-64.

56. § 2002, 100 Stat. at 3207-64.

57. § 2002(2), 100 Stat. at 3207-60.

58. Ann B. Wroblewski, *FY 1988 Assistance Requests for Narcotics Control*, DEP’T ST. BULL., June, 1987, at 74 (statement by Assistant Secretary for International Narcotics Matters before the Subcommittee on Foreign Operations of the House Appropriations Committee on Apr. 22, 1987.).

59. *Id.* at 75.

60. See Omnibus Consolidated and Emergency Supplemental Appropriations Act, Pub. L. No. 105-277, § 821, 112 Stat. 2681 (1998).

61. See Military Construction Appropriations Act, Pub. L. No. 106-246, § 3204, 114 Stat. 511, 575 (2000).

62. See STAFF OF SENATE CAUCUS ON INT’L NARCOTICS CONTROL, 105TH CONG., ON-SITE STAFF EVALUATION OF U.S. COUNTER-NARCOTICS ACTIVITIES IN BRAZIL, ARGENTINA, CHILE, AND COLOMBIA 16 (Comm. Print 1998).

of the coca crop went up by 25 percent, from 44,000 to 59,000 hectares. The Colombians claimed to have eradicated over 20,000 hectares of this crop in 1995, but U.S. estimates discounted much of this and could confirm only around 9,000 hectares effectively eradicated, still an impressive effort and double the year before. . . . The Colombians insisted on estimating eradication by the quantity of defoliant used and on limited ground truthing. The United States based its estimates on photographic interpretation and on an established methodology for crop estimation. The analysis based on this method indicated that a lot of defoliant never reached actual coca fields and much of the spray that did was washed off by rain. Thus, actual results fell short of claims. . . . [B]etween 1995 and 1996, estimates of the size of coca cultivation in Colombia went from a base of 51,000 to 67,000 hectares, an increase of over 30 percent in one year. State Department estimates count this increase as new coca. The [Colombian] Embassy disputes this view, arguing that the increases are mature coca that was missed in previous estimates. However the increase is calculated, if it is accurate, then it came in the face of a massive eradication effort that has seriously strained the capabilities of the CNP [Colombian National Police] and nearly bankrupted the INL [International Narcotics and Law Enforcement Affairs] budget.⁶³

The report indicates that there were no definitive methods to measure the effectiveness of the program because the GOC placed the emphasis on outputs – “how much defoliant sprayed, [coverage of] hectares, how many plants killed, [instead of actual] outcomes – net reduction of cultivation.”⁶⁴ The GOC’s assumption, according to caucus staffers, was that applying pressure on growing coca, through continued eradication efforts, placed such a strain on cultivation that eventually the growers would simply give it up.⁶⁵ However, the assumption that growers would discontinue cultivation in the face of mounting pressure proved an untested assumption because no Colombian official could offer any definitive indicators that any progress was being made toward that goal when faced with the reality of actual increased areas of coca cultivation.⁶⁶ The Caucus detailed more countervailing reasons why this pressure or strain theory of cultivation was untenable:

The problem with applying this analogy [or theory] to Colombia is that the geography of Colombia gives a much greater scope for moving beyond eradication zones. It is also unclear who the decision maker is whose views the eradication effort is trying to affect. If the typical decision maker is a peasant grower whose sole livelihood is based on one crop and if his efforts can be frustrated sufficiently, then he – and presumably many like him – will voluntarily begin to walk away. . . . But if the pattern of cultivation in Colombia is not based on peasant cultivators but on drug-lord or guerrilla-group overseers who force peasants to grow, then there is a very

63. *Id.*

64. *Id.*

65. *Id.*

66. *Id.*

different situation. The latter groups are not as vulnerable to limited eradication efforts.⁶⁷

The caucus report indicated that a successful eradication effort would require increases in equipment and personnel with a sustained eradication effort of 40,000 hectares per year for at least two or three years.⁶⁸

While the buildup and mass eradication effort came in the form of Plan Colombia, even in 1997, just two years before Plan Colombia's inception, many concerns existed concerning the program's effectiveness.⁶⁹ The caucus report, chalked full of the eradication program's associative problems, cautioned that sparse resources, environmental protests — already an issue raised by the Minister of Health in Colombia — and uncertainty that the United States would be willing to support significant increases in funding, given the DoS opinion that such a level was unnecessary, weakened support for the efforts.⁷⁰ Still, in the midst of disarray, the eradication effort was seen as an integral component of the drug-control strategy, despite the GOC's myopic adherence to the aerial eradication efforts.⁷¹ With the aerial eradication effort receiving nominal support from the Senate caucus and the DoS questioning whether an increased eradication effort was even necessary, in 1999, the GOC answered its critic's calls for a more focused program in form of Plan Colombia.⁷²

U.S. policy concerning Plan Colombia has witnessed a combining of the anti-drug theme of previous administrations and the war on terrorism during the current Administration.⁷³ Plan Colombia may not answer all the questions policymakers in the United States have concerning the eradication efforts, but Congress has come a long way from the days of blindly appropriating funds.⁷⁴ Despite DoS claims that the years of investment in Colombia are now beginning to pay off, Congress now attaches certain requirements to appropriated funds for the eradication program.⁷⁵ In 2002, Congress appropriated funds for the procurement of chemicals for aerial coca eradication, with the following stipulations:

67. *Id.* at 17.

68. *Id.*

69. *See generally id.* (indicating that taken as a whole the program lacks "serious overall coordination"); Nagle, *supra* note 5 at 1269 (discussing the formulation by the Colombian President and the U.S. Department of State of plan Colombia).

70. STAFF OF SENATE CAUCUS ON INT'L NARCOTICS CONTROL, *supra* note 62 at 17.

71. *Id.*

72. *See* Nagle, *supra* note 5 at 1268-70.

73. *See* Statement of Paul E. Simons, *supra* note 7.

74. *See* Thomas, *supra* note 48 at 62; Wroblewski *supra* note 48 at 73.

75. Statement of Paul E. Simons, *supra* note 7; Foreign Operations, Export Financing, and Related Programs Appropriations Act, Pub. L. No. 107-115, 115 Stat. 2118, 2131 (2002).

[Funds made available for the] . . . procurement of chemicals for aerial coca fumigation programs may be made available for such programs only if the Secretary of State, after consultation with the Administrator of the Environmental Protection Agency, the Secretary of the Department of Agriculture, and if appropriate, the Director of the Centers for Disease Control and Prevention, determines and reports to the Committees on Appropriations that: (1) aerial coca fumigation is being carried out in accordance with regulatory controls required by the Environmental Protection Agency as labeled for use in the United States, and after consultation with the Colombian Government to ensure that the fumigation is in accordance with Colombian laws; (2) the chemicals used in the aerial fumigation of coca, in the manner in which they are being applied, do not pose unreasonable risks or adverse effects to humans or the environment; and (3) procedures are available to evaluate claims of local citizens that their health was harmed or their licit agricultural crops were damaged by such aerial coca fumigation, and to provide fair compensation for meritorious claims.⁷⁶

In order to receive the funding, the DoS requested the EPA issue a report in an attempt to meet the newly enacted congressional requirements.⁷⁷ In August 2002, the EPA, at the behest of the DoS, issued its report in an effort to comply with the requirements of the Foreign Operations, Export Financing, and Related Programs Appropriations Act ("FOAA").⁷⁸ This report along with additional DoS reports, were presented to Congress by the DoS as evidence that the requisite components of the enacted appropriations bill were met.⁷⁹ To provide some initial background, an overview of the DoS report as prepared by the INL will be useful.

IV. MORE QUESTIONS THAN ANSWERS: THE STATE DEPARTMENT'S REPORT TO CONGRESS ON THE AERIAL ERADICATION PROGRAM

A. Overview

In its report to Congress, the INL detailed to Congress that the spray mixture used in the aerial eradication of coca in Colombia contains three components: water, an EPA-registered commercial formulation of the herbicide gly-

76. 115 Stat. at 2130-31.

77. BUREAU FOR INT'L NARCOTICS AND LAW ENFORCEMENT AFFAIRS, U.S. DEP'T OF STATE, RESPONSE FROM EPA ASSISTANT ADMINISTRATOR JOHNSON TO SECRETARY OF STATE, AUGUST 19, 2002, *in* REPORT ON ISSUES RELATED TO THE AERIAL ERADICATION OF ILLICIT COCA IN COLUMBIA (2002), at <http://www.state.gov/g/inl/rls/rpt/aeicc/13237pf.htm>.

78. *Id.*

79. *Id.*; *see also* BUREAU FOR INT'L NARCOTIC AND LAW ENFORCEMENT AFFAIRS, U.S. DEP'T OF STATE, CHEMICALS USED FOR THE AERIAL ERADICATION OF ILLICIT COCA IN COLUMBIA AND CONDITIONS OF APPLICATION, *in* REPORT ON ISSUES RELATED TO THE AERIAL ERADICATION OF ILLICIT COCA IN COLUMBIA (2002), at <http://www.state.gov/g/inl/rls/aeicc/13234pf.htm>.

phosate, and a surfactant named Cosmo-Flux 411F.⁸⁰ The mixture, 55% water, 44% glyphosate formulation, and 1% surfactant (Cosmo-Flux 411F), is applied to coca at a rate of 2.53 gallons per acre.⁸¹ The commercial glyphosate formula is registered, produced, and sold in Colombia, where the INL purchases it for the GOC.⁸² The commercial glyphosate formulation, also registered for sale in the United States for non agricultural use, contains 41% glyphosate salt and 59% inert ingredients.⁸³ The inert ingredients consist of three-fourths water, with the remainder being a surfactant blend.⁸⁴ Surfactants are commonly used in conjunction with herbicides to enhance the “ability of the herbicide to penetrate the waxy cuticle of the leaf surface.”⁸⁵ In order for the glyphosate to perform its function — blocking an enzyme that is essential for plant growth — it must move from the leaf’s surface (the site of application) “toward the actively growing meristematic tissue.”⁸⁶ An effective surfactant will decrease the “surface tension of the adhering spray droplet” which in turn allows the droplet, to spread farther on the leaf.⁸⁷ The more surface coverage on the leaf means more herbicidal soakage and less run-off.⁸⁸ Also, surfactants effectively stabilized droplets, and reduce evaporation, thereby minimizing spray drift.⁸⁹

In October, 1997, after some testing showed a low level of effectiveness on coca plants with the glyphosate formulation, the additional surfactant Cosmo-Flux 411F was added to the mixture.⁹⁰ Cosmo-Flux 411F, while unavailable in the United States, is approved for use by the GOC, used in Colombian agriculture, and was a close match for U.S. products that had been tested as additives to glyphosate for use in coca eradication.⁹¹ Cosmo-Flux 411F has been designated in the lowest toxicological risk category by the Colombian Farming and Livestock Institute (“ICA”) and has been classified as “slightly toxic” by the Colombian Ministry of Health.⁹² In September 2001, the EPA, after the INL requested a complete chemical component review of Cosmo-Flux 411F to better assess safety concerns related to the spray program, determined that all the ingredients of

80. CHEMICALS USED FOR THE AERIAL ERADICATION OF ILLICIT COCA IN COLUMBIA AND CONDITIONS OF APPLICATION, *supra* note 79.

81. *Id.*

82. *Id.*

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.*

88. *See id.*

89. *See id.*

90. *See id.*

91. *Id.*

92. *Id.*

Cosmo-Flux 411F are exempt from the tolerance requirements when included in pesticides under 40 C.F.R. § 180.1001.⁹³ The EPA's chemical review found that Cosmo-Flux 411F's low toxicity level, given the actual spray mixture contained only 1% Cosmo-Flux 411F (well within the manufacturers recommendations that the spray mixture contain no more than 1.5% Cosmo-Flux 411F), satisfied any safety concerns the INL expressed.⁹⁴

The spray mixture components are mixed at air bases in Colombia by the members of the CNP, trained specifically for handling the ingredients.⁹⁵ The aviators, comprised of Colombians, third-country nationals, and U.S. citizens, are experienced spray pilots proficient in using onboard computers, digital global positioning systems (D/GPS), and many other technical pieces of equipment, to ensure that spray missions are conducted correctly.⁹⁶ Eradication missions are preceded with technology-supported reconnaissance to ensure spray accuracy, but positive visual identification of the targeted coca field by the pilot during the actual spray mission is still required.⁹⁷ Spray pilots apply the herbicide at altitudes of less than one hundred feet leaving them vulnerable to hostile ground fire or susceptible to crashing into obstacles.⁹⁸ Pilots are instructed never to spray over towns, populated areas, or anywhere near people, homes, or occupied buildings.⁹⁹ Also, spray missions frequently never happen because of the strict weather restrictions placed on the program by the GOC's Environmental Auditor.¹⁰⁰ Furthermore, wind speeds, temperature, humidity, temperature inversion, and rain can each independently dictate whether a mission is carried out.¹⁰¹ With so many variables facing a successful mission, it was no wonder the INL conceded that "[w]hile every effort is made to minimize human and mechanical mistakes, occasional errors are unavoidable."¹⁰² With the program's effective herbicide mixture, extensive personnel training, pilot experience, and multilateral agency cooperation in Colombia, the INL claimed to have found few instances of spray pilot error, overspray, or spray-drift when ground truth verification was performed.¹⁰³ In fact, the INL claimed that "many complaints of erroneous spray-

93. *Id.*
94. *See id.*
95. *Id.*
96. *See id.*
97. *See id.*
98. *See id.*
99. *Id.*
100. *See id.*
101. *See id.*
102. *Id.*
103. *See id.*

ing of legal crops have proven groundless after subsequent investigation.”¹⁰⁴ The INL report provides a workable overview concerning the outlying dimensions of the program, but the EPA had to issue its report in order to satisfy congressionally-tethered funding.

B. Congressional Mandate Number One: Adherence to Regulatory Controls

The first requirement contained in the FOAA mandated that the “aerial coca fumigation is [to be] carried out in accordance with regulatory controls required by the Environmental Protection Agency as labeled for use in the United States, and after consultation with the Colombian Government to ensure that the fumigation is in accordance with Colombian laws.”¹⁰⁵ According to the EPA, glyphosate use pattern in Colombia, as detailed by the DoS, is most similar to forestry or rights-of-way uses in the United States.¹⁰⁶ Glyphosate, the most widely-used herbicide in the United States (accounting for use on more than 400 crop and non-crop sites) is non-selective (i.e. used where all vegetation is undesirable¹⁰⁷) in action and has no residual activity after contact with soil.¹⁰⁸ According to the EPA, the forestry use of glyphosate in the United States includes application by aerial spraying at rates from 2-10 pounds per acre, which is equivalent to 2.2 -11.2 kilograms of active ingredient per hectare.¹⁰⁹ Product instructions in the United States also recommend “that a non-ionic surfactant be added to the spray mixture for all forestry uses” at the rate of 0.5% to 1.5%.¹¹⁰ Glyphosate is also a foliar active herbicide, meaning it circulates through the plant’s vascular system, not just the treated foliage, much different than contact herbicides like paraquat, that affect only the portion of the plant onto which it is applied.¹¹¹

While glyphosate seems perfectly-suited for treating coca because it kills the entire plant, thereby preventing regrowth from any untreated part, like a root, the ability for replanting shortly after application is possible once absorbed by the soil because it no longer has herbicidal activity.¹¹² However, the EPA issued a word of caution in that glyphosate does not control all broadleaf woody plants,

104. *Id.*

105. 115 Stat. at 2131.

106. RESPONSE FROM EPA ASSISTANT ADMINISTRATOR JOHNSON TO SECRETARY OF STATE, *supra* note 77.

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.*

111. *Id.*

112. *See id.*

like coca, and so for effective results timing is critical.¹¹³ To ensure maximum penetration and absorption, a surfactant, composed of alcohols or fatty acids, is typically included in the formulation or added later.¹¹⁴ In concluding its analysis of comparable use of glyphosate in the United States, the EPA warns that it is unsure how close forestry use approximates that of coca eradication.¹¹⁵ As an example, it points out that aerial application to forestry sites is performed using helicopters at air speeds of sixty to eighty miles per hour and any fixed-wing aircraft use is "extremely rare."¹¹⁶

The report concluded that application rates described as used in Colombia are within the parameters listed on U.S. labels.¹¹⁷ The addition of a surfactant was found to be consistent with practices in the United States, but no analysis of Cosmo-Flux 411F was performed because it is not sold in the United States.¹¹⁸ The requirement that consultation with the Colombian Government occurs to ensure that the fumigation is in accordance with Colombian laws, was accomplished by a simple letter from the Ministry of Foreign Affairs of the GOC confirming that the spraying is being carried out in accordance with each and every applicable Colombian law.¹¹⁹ The letter from the GOC assuring compliance combined with the EPA conclusions that application rates described as used in Colombia were within the parameters listed on United States labels, in the EPA's estimation, provided the DoS with enough evidence to satisfy the first Congressional requirement.¹²⁰

C. Congressional Mandate Number Two: Chemicals Must be Safe

The second requirement contained in the FOAA mandates that "the chemicals used in the aerial fumigation of coca, in the manner in which they are being applied, do not pose unreasonable risks or adverse effects to humans or the environment."¹²¹ Beginning with potential unreasonable health risks to humans,

113. *See id.*

114. *Id.*

115. *See id.*

116. *Id.*

117. *Id.*

118. *See id.*

119. *See* BUREAU FOR INT'L NARCOTICS & LAW ENFORCEMENT AFFAIRS, U.S. DEP'T OF STATE, MEMORANDUM OF JUSTIFICATION CONCERNING DETERMINATION ON HEALTH, ENVIRONMENTAL, AND LEGAL ASPECTS OF COCA ERADICATION IN COLUMBIA, Sept. 2002, *in* REPORT ON ISSUES RELATED TO THE AERIAL ERADICATION OF ILLICIT COCA IN COLUMBIA (2002), *at* <http://www.state.gov/g/inl/rls/rpt/aeicc/13232pf.htm>.

120. *See id.*; *see also* RESPONSE FROM EPA ASSISTANT ADMINISTRATOR JOHNSON TO SECRETARY OF STATE, *supra* note 77.

121. 115 Stat at 2131.

the EPA revealed to Congress that every piece of information that it had obtained concerning the methods, components, and overall technical aspects of the eradication program, was provided by the DoS.¹²² In order to assess any possible safety concerns, the EPA evaluated each component of the mixture separately, as opposed to the actual spray mixture.¹²³ The EPA's inability to evaluate the final spray mixture was compounded by an inability to analyze Cosmo-Flux 411F, as it is not available in the United States.¹²⁴ However, the individual ingredients contained in Cosmo-Flux 411F were analyzed and found not to be highly toxic by oral or dermal routes.¹²⁵ While the ingredients in Cosmo-Flux 411F are not highly toxic, the ingredients could cause mild eye and skin irritation.¹²⁶ Glyphosate technical grade active ingredient ("TGAI") was documented as having "a low acute toxicity via the oral or dermal routes," but also was listed as a mild eye irritant and a slight dermal irritant.¹²⁷ Prior clinical testing of animals provided data indicating that no respiratory or systemic toxicity existed, thereby waiving the requirement to perform any inhalation study.¹²⁸ Also, animal testing showed "[n]o dermal or systemic toxicity . . . following repeated dermal exposures."¹²⁹ Glyphosate is also classified as a Group E chemical, evincing no traces of carcinogenicity to humans, following animal studies.¹³⁰ Still, the EPA concluded that acute dietary exposure was possible for humans consuming any livestock or food crops inadvertently sprayed during an eradication mission.¹³¹ However, the EPA found that the impact of acute dietary exposure would be limited (given that glyphosate is a contact herbicide) because the plant will die before consumption of treated crops.¹³² If a coca field is sprayed no more than twice, as the DoS claims, the EPA concluded that no chronic food exposure is expected.¹³³ Exposure would be greatest for the handlers (i.e. "individuals mixing the concentrated formulated product to prepare the tank mix and loading the tank mix in the aircraft") of the concentrated formulated product.¹³⁴ Short-term dermal post-application exposures, but not inhalation, are likely for people pruning or leaf

122. See RESPONSE FROM EPA ASSISTANT ADMINISTRATOR JOHNSON TO SECRETARY OF STATE, *supra* note 77.

123. *See id.*

124. *See id.*

125. *Id.*

126. *See id.*

127. *Id.*

128. *Id.*

129. *Id.*

130. *See id.*

131. *Id.*

132. *Id.*

133. *Id.*

134. *Id.*

pulling coca plants immediately following a spraying.¹³⁵ But, the EPA contended that any intermediate or long-term post-application exposures would be offset by the requirement that fields be sprayed no more than twice.¹³⁶ “Additionally, glyphosate is a translocated herbicide which is rainfast within [forty-eight] hours after spraying [So] potential exposure to dislodgeable residues of glyphosate after [forty-eight] hours is expected to be minimal.”¹³⁷ “[O]ral exposure ([i.e.] hand-to-mouth) resulting from individuals being directly sprayed by glyphosate . . . [and] [n]on-dietary incidental oral exposure [were] not” analyzed in the report because the EPA took the DoS at its word that no spraying is conducted when people are present.¹³⁸ But, the EPA did admit exposure to bystanders in areas near the targeted spraying zones was a threat, but again relied on the DoS’s claimed safeguards against spray drift.¹³⁹ If all the “procedures are adhered to and operational equipment is in working order,” the EPA concluded that spray drift would be minimized.¹⁴⁰

To solidify its case that the eradication program was not harmful to humans, the EPA relied on incident reports provided by the DoS from the poppy eradication program.¹⁴¹ Overall, however, the program-specific information provided to the EPA by the DoS contained only coca eradication data and “did not address the conditions of use for poppy.”¹⁴² To further complicate matters, no human incident data was provided by the DoS for the coca eradication program when the DoS admitted to the EPA that the application rate for poppy was lower than that for coca, and that the use pattern of the glyphosate mixture on poppy differs from the use on coca.¹⁴³ The EPA explains further that the DoS provided:

[N]o information as to the exact makeup of the tank mixture sprayed on poppy, or whether the same glyphosate product and adjuvants used in the coca eradication program were used in the poppy eradication program. The [EPA] also has questions as to the geographical area differences, the frequency of repeated applications, and the size of the area treated on each spray mission. Therefore, generalized conclusions drawn from human incident data as a result of application to opium poppy, in comparison to conditions of use for the coca eradication program should be made with caution.¹⁴⁴

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135. *Id.*
 136. *Id.*
 137. *Id.*
 138. *See id.*
 139. *Id.*
 140. *Id.*
 141. *See id.*
 142. *Id.*
 143. *Id.*
 144. *Id.*

So, with missing information serving as a partial foundation for tenuously-based comparisons, the EPA analyzed the human incident reports for poppy eradication and found that “[ninety-five percent] of the illnesses reported are likely background incidents unrelated to the spraying of herbicide to poppy.”¹⁴⁵ The remaining five percent increase in illnesses was summarily dismissed as unlikely to have been caused by the spraying of the glyphosate tank mixture.¹⁴⁶ However, the EPA admitted that data contained in the incident reports suggested that the poppy spray eradication program “could have resulted in minor skin, eye, or respiratory irritation, and perhaps headache or other minor symptoms.”¹⁴⁷ But the EPA was unable to make any conclusive assessments concerning these possible illnesses because no mechanism was in place to provide “detailed information on timing of application, history of exposure, and medical documentation of symptoms related to exposure to the glyphosate tank mix. . . .”¹⁴⁸ The EPA ended its analysis of the human incident reports from poppy eradication by concluding that none of the data provided a compelling case that the glyphosate spray mixture had been a significant cause of illness in the region studied, even though the reports were not altogether satisfactory.¹⁴⁹ To provide a more reliable system of documentation for future health reports concerning the spray program, the EPA recommended prospective tracking with specific criteria in order to evaluate and issue prophylactic measures to better analyze any potential health effects.¹⁵⁰

While the EPA’s conclusion that no unreasonable human health effects were conclusively a result of the program, albeit qualified and rife with trepidation, it did suggest one substantive change to the coca eradication program:

[T]he surfactant used in the [glyphosate] formulated product reportedly cause[s] severe skin irritation and [can] be corrosive to the eyes, as would be expected for many surfactants. . . . These findings suggest that any of the reports of toxicity to the eye may be due to the surfactant, not the glyphosate per se. The product has been determined to be toxicity category I for eye irritation, causing irreversible eye damage. . . . The greatest potential for eye exposure is expected for workers mixing and loading the concentrated glyphosate product. There is also the potential for eye exposure as a result of entering treated fields after treatment to perform pruning or harvesting activities. . . . [T]he [DoS] agreed to supply the [EPA] with a full battery of the six acute [e]ye toxicity tests on the tank mix. To date this information has not been received. Until such information is supplied to the Agency, EPA cannot evaluate the potential ocular or dermal toxicity resulting from direct contact with the

145. *Id.*

146. *Id.*

147. *Id.*

148. *Id.*

149. *Id.*

150. *See id.*

tank mixture. Therefore, due to the acute eye irritation caused by the concentrated glyphosate formulated product and the lack of acute eye toxicity data on the tank mixture, the [EPA] recommends that [the] DoS consider using an alternative glyphosate product (with lower potential for acute [eye] toxicity) in future coca and/or poppy aerial eradication programs.¹⁵¹

With its findings and recommendations concerning unreasonable human health risks concluded, the EPA next turned its attention to an analysis of any ecological risks concerning the use of glyphosate in the aerial eradication program.¹⁵²

The basis of the EPA's risk assessment concerning the environment were environmental fate assessments performed by pesticide companies, as required by law, seeking product registrations and submitted to the EPA.¹⁵³ Fate studies for glyphosate, and other pesticides, "provide[] specific data that, together with the physical and chemical properties of the pesticide, are then combined to produce an integrated environmental fate assessment and to identify the potential of the pesticide to leach to groundwater, and/or reach surface water, and/or bioaccumulate in aquatic organisms."¹⁵⁴ Similar to the evaluation of human health data, the EPA cautioned that a degree of uncertainty exists when data gleaned from the testing of environmental systems and species is extrapolated outside the environmental conditions of the studies.¹⁵⁵ Using the previous studies, the EPA's ecological risk assessment concerning non-target terrestrial birds and mammals, found that no risk for birds and mammals based on dietary exposure would be expected from the active ingredient glyphosate.¹⁵⁶

However, risk to non-target plants was determined to be likely because glyphosate is a "broad spectrum herbicide effective at very low exposure rates."¹⁵⁷ The glyphosate application rate with potential to damage exposed plants is as low as 0.07 lb ai/A.¹⁵⁸ The DoS's recommended application rate of glyphosate in Colombia is 3.34 lb ai/A, well above the rate where damage can occur.¹⁵⁹ The potential for spray drift containing such a high rate of application makes it likely that non-target plants hundreds of feet away will be exposed.¹⁶⁰ The exposure to just a fraction of glyphosate means that, while some affected

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151. *Id.*
152. *See id.*
153. *Id.*
154. *Id.*
155. *Id.*
156. *Id.*
157. *Id.*
158. *Id.*
159. *Id.*
160. *See id.*

plants might recover, more sensitive plants will either die, have reduced reproductive success, or have reductions in yields for crop plants.¹⁶¹

Aquatic life, fish, invertebrates, and aquatic plants, were found to be at a slight risk from exposure.¹⁶² But, even though surface-water exposure could be expected, the measured glyphosate toxicity values were found to be quite low for aquatic organisms.¹⁶³ “Therefore, [the EPA concluded] aquatic organisms should not be at risk from exposure to glyphosate.”¹⁶⁴ Yet, the EPA, given its lack of information and program specificity, admitted that much greater exposure could occur from direct overspray of water bodies than what it tested, but “such simulation is not a standard component of Agency risk assessments.”¹⁶⁵ While the DoS prohibits direct overspray of water bodies, “[i]t is possible that . . . ecologically important water bodies too small to appear on maps could be sprayed directly in a project as large as the coca eradication program.”¹⁶⁶ While the EPA conducted the risk assessments using only glyphosate, it admitted that “formulations of glyphosate products [registered with the EPA] have shown them to be more toxic than glyphosate alone.”¹⁶⁷ However, “[t]he risk to non-target terrestrial and aquatic animals from formulated glyphosate used for coca eradication [could not be tested] because the [a]gency does not have [the] relevant toxicity data for the Colombian formulation, nor for the adjuvant Cosmo-Flux 411F.”¹⁶⁸

While direct spraying is less likely to occur because of strict DoS guidelines, the risk to non target terrestrial and aquatic animals is heightened by the potential for spray drift.¹⁶⁹ The EPA conducted an assessment of potential spray drift by incorporating a number of input parameters from the spray program in Colombia, as provided by the DoS, into an existing assessment on forestry applications performed by the USDA Forest Service.¹⁷⁰ Some of the input parameters included in the analysis were aircraft type, spray volume, nonvolatile rate (of spray mixture), droplet spectrum, wind speed, relative humidity, temperature, release height, and spray lines.¹⁷¹ The list of specific inputs supplied by the DoS, while not encompassing all possible parameters, made an accurate analysis more difficult because overall a “number of general uncertainties” inherently exist

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

167. *Id.*

168. *Id.*

169. *See id.*

170. *See id.*

171. *Id.*

when trying to estimate spray drift in Colombia using the USDA Forest Service's model.¹⁷² While general uncertainties were admitted and an exclusive list of parameters remained unachieved, the list of DoS supplied inputs was also less than accurate.¹⁷³ Conflicting input information supplied by the DoS created uncertainty about the droplet size, which is "one of the most important parameters affecting drift of pesticides."¹⁷⁴ Droplet size was not the only problem, as the EPA explained:

Other uncertainties associated with inputs include inputs for meteorology and release height. AgDrift modeling requires site-specific inputs for meteorology. In coca eradication efforts (as well as agricultural applications in the US) wind speed, temperature, and humidity are measured at the airport [sic] which may not be representative of these parameters at the application site. The applicator is ultimately given the responsibility of determining if conditions at the target site are acceptable.¹⁷⁵

With spray drift uncertainty adding to an already convoluted assessment for aerial coca eradication in Colombia, the EPA attempted to draw conclusions concerning the environment.¹⁷⁶ According to the EPA, glyphosate dissipation in the field correlates with the climate, and glyphosate appears to be more persistent in cold than in heat, so dissipation of glyphosate in Colombia may be more rapid than in the United States.¹⁷⁷ Glyphosate adheres strongly to soils and sediments, so the potential for leaching to ground-water or to reach surface water as dissolved run off is expected to be minimal.¹⁷⁸ "However, glyphosate has the potential to contaminate surface water as a result of residues adsorbed to soil particulates suspended in runoff water."¹⁷⁹ The EPA used data from field tests performed on ponds and stream water systems in Georgia, Michigan, and Oregon to measure aquatic dissipation of glyphosate.¹⁸⁰ The tests showed that glyphosate dissipated rapidly after treatment with accumulation higher in the pond than in the stream sediments.¹⁸¹ However, a separate test on a farm pond in Missouri showed that the half-life of glyphosate in water used as an irrigation source was 7.5 days.¹⁸² According to the EPA, "[g]iven the strong absorption [sic] to sedi-

172. *See id.*

173. *See id.*

174. *Id.*

175. *Id.*

176. *See id.*

177. *Id.*

178. *Id.*

179. *Id.*

180. *Id.*

181. *Id.*

182. *Id.*

ments, glyphosate is most likely to be associated with the sediment . . . , [but] glyphosate is not likely to bioaccumulate in aquatic organisms.”¹⁸³

The EPA also used Michigan, Georgia, and Oregon to conduct field tests for glyphosate dissipation in a forestry environment.¹⁸⁴ Residues of an aerially-applied glyphosate product using the an application rate of 3.75 lb of acid equivalent/acre declined rapidly from tree foliage in less than one day at the Michigan and Georgia sites, and less than [fourteen] at a site in Oregon The average half-life, for overall dissipation from the forest-ecosystem was [one hundred] days for glyphosate (35 to 158 days) and [one hundred eighteen] days for AMPA (71 to 165 days). [AMPA is aminomethyl phosphonic acid, the major degradate formed from glyphosate].¹⁸⁵

While field tests in the United States concerning glyphosate use in relation to water and forestry are not exact given the many differences in ecology and environment, extrapolation of North American data concerning wildlife is even more attenuated.¹⁸⁶ The wildlife in Colombia is technically unquantifiable using North American data because “[t]he toxicity of a pesticide to different classes of animals and plants can vary widely among species within an individual ecosystem.”¹⁸⁷ Determining the fate of pesticides in the environment in areas like potential water contamination under laboratory or field testing parameters are performed with North American soils, hydrology, and climate data.¹⁸⁸ While data extrapolations gleaned from North American testing information in these areas are difficult, according to the EPA, the most important uncertainty in conducting a risk assessment of Colombia’s aerial program “concerns differences in the formulation and tank mix for use in Colombia from those used in the United States.”¹⁸⁹ The EPA explains:

Toxicity studies indicate that U.S. formulations of glyphosate are more toxic to non-target animals than the technical product alone, but not toxic at levels of expected exposure. However, none of the ecological effects studies submitted to or encountered by the Agency for glyphosate were performed with the formulation that the DoS has indicated is used in Colombia, which may contain different types of cationic surfactants than those in formulations for which the Agency has data. Consultant Jeremy Bigwood presented a literature search of over [two hundred] citations . . . stating that there have been NO scientific investigations on the past or present formulations being used in Colombia. In addition, the Agency does not have ecological toxicity information on adjuvant Cosmo-Flux 411F. . . . [Also] there is some in-

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183. *Id.*
 184. *See id.*
 185. *Id.*
 186. *See id.*
 187. *Id.*
 188. *Id.*
 189. *See id.*

consistency in the description of Cosmo-Flux in the two available labels, in Spanish and in English. However, all of the individual ingredients (surfactants) which comprise the adjuvant are substances with low oral and dermal mammalian toxicity. The toxicity of the blend of these surfactants is not known; although the Agency often requires formulation toxicity data for non-target plants and aquatic organisms, tank-mix adjuvants are not required to be included in these studies.¹⁹⁰

The EPA remained unable to definitively provide an overall risk assessment that determined the ecological impact on plants, animals, organisms, and water bodies until the toxicity of the tank mix formulation currently used in Colombia was tested.¹⁹¹ As a final thought of sorts, the EPA cited a report done for the Government of Ecuador finding that exposure to a dried formulation containing glyphosate and a surfactant caused the death of more than 50% of several beneficial insect species¹⁹² Furthermore, Amazon Alliance provided the EPA information concerning incident reports in Colombia, which show possible adverse effects on crops and domesticated animals from the use of glyphosate on illicit crops.¹⁹³ The EPA called the adverse incidents on plants "not inconsistent" with its own studies but dismissed the reported claims of animal incidents as not consistent with its information.¹⁹⁴ In the end, the EPA's report, inasmuch as it addressed the second congressional stipulation concerning any unreasonable risks to people or adverse effects on the environment, left many unanswered questions.¹⁹⁵ The primary EPA-admitted shortcomings contained within this portion of the report focus on two important areas:

- (1) ecological non-specificity, meaning the information used by the EPA to make conclusions about Colombia's program was extrapolated from testing that not only contained components not Colombia specific, but were also not conducted in the environment where the actual spraying is occurring, and
- (2) tank mix non-specificity, meaning all the information used as the basis for the report was the result of testing on the individual components that comprise the tank mix, and not the actual tank mixture, which includes the untested Cosmo-Flux 411F.¹⁹⁶

190. *Id.*

191. *See id.*

192. *See id.*

193. *Id.*

194. *See id.*

195. *See generally id.* (stating that the reliability of these reports are in question due to an insufficient amount of information included for each incident reported).

196. *Id.*

D. Congressional Mandate Number Three: Complaint Procedure

The final Congressional funding mandate for the aerial eradication program was that a system to evaluate the claims of local citizens who allege illness or destruction of licit crops as a result of the spraying must exist.¹⁹⁷ If the claim turns out to be meritorious, then “just compensation” must be paid to the victim.¹⁹⁸ According to the DoS, “since the inception of the aerial illicit crop eradication program, the [GOC] has had a process by which Colombian citizens might seek compensation for claims of harm to legal crops or human health.”¹⁹⁹ However, the system was updated in 2001 to streamline the process and make it more “efficient and well-publicized.”²⁰⁰ Depending on which harm a citizen alleges, the system handles a complaint for legal crop spraying differently than for allegations of health harm.²⁰¹

Spraying of legal crops, if sufficient evidence, including site, date, and details of the incident that allegedly caused the harm, is presented to the GOC authorities, farmers will be compensated for the market value for lost crops.²⁰² The new system to process complaints for damage to legal crops involves a standardized recording procedure and ground truthing verification when needed.²⁰³ To ensure that Colombian citizens understand how this highly organized and bureaucratized system operates, the assigned GOC agency places newspapers and radio announcements informing citizens of their rights before and during each spray operation.²⁰⁴ While it remains unknown how effective these methods are at reaching the Colombian citizens, the DoS claims that most complaints are “ruled out by an initial check of the flight records establishing that spraying did not take place near the site of the claimed harm.”²⁰⁵ By the end of August 2002, the GOC agency responsible for the procedural oversight of the new complaint process had received more than one thousand complaints of legal crop damage.²⁰⁶ The GOC agency closed almost eight hundred of these cases after minimal investigation showed that “spraying did not take place in the complainant’s vicinity during the

197. 115 Stat at 2130-31.

198. 115 Stat at 2130-31.

199. BUREAU FOR INT’L NARCOTICS & LAW ENFORCEMENT AFFAIRS, U.S. DEP’T OF STATE, THE GOVERNMENT OF COLOMBIA’S PROCEDURES FOR HANDLING CLAIMS OF COLOMBIA CITIZENS THAT THEIR HEALTH WAS HARMED OR THEIR LICIT AGRICULTURAL CROPS WERE DAMAGED BY AERIAL ERADICATION (2002), at <http://www.state.gov/g/inl/rls/rpt/aeicc/13242pf.htm>.

200. *Id.*

201. *Id.*

202. *Id.*

203. *See id.*

204. *Id.*

205. *Id.*

206. *Id.*

date of the complaint.”²⁰⁷ The two hundred plus remaining complaints required field verification and were in the “pipeline” for verification.²⁰⁸ As of August 2002, the GOC, despite admitting in the report that “there may be slight drift of the spray mix at times,” surprisingly had agreed to pay damages on only one claim.²⁰⁹ While the DoS touts the process for evaluating claims of legal crop damage, complaints of adverse health effects are more complicated to adjudicate.²¹⁰

The claims procedure, when it comes to allegations of health harm, is arduous because the element of causation is difficult to establish.²¹¹ According to the DoS, establishing causation is difficult because “in the context of rural Colombia . . . a claimant would be hard-pressed to establish that an alleged health harm was caused by spraying and not poverty, unsanitary living conditions, poor access to health care, lifestyle, or use of dangerous chemicals for coca cultivation and processing.”²¹² While the DoS continued to cite scientific evidence to support its contention that no serious health risks are posed by the use of glyphosate, in the event a citizen does claim health harm as a result of exposure, legal action is the only recourse to receive compensation.²¹³ The two forms of legal action, both involving actions against the GOC or appropriate agency, seem like impossible tasks for an impoverished claimant, where, as the DoS admits, in the context of rural Colombia, unsanitary living conditions and poor access to health care are rampant.²¹⁴ While the process for claiming health harm as a result of the spraying appears difficult, the GOC is attempting proactively to ensure health safety for its citizenry through a program involving the Colombian Army.²¹⁵ Ostensibly, the program, titled Medical Civic Action Program (“MEDCAP”), involves Army medics providing all citizens living in the spray zones with access to vitamins, immunizations, and medical treatment, while the spraying is occurring.²¹⁶ At the time of the report, training for the MEDCAP Army medics had just been completed.²¹⁷ Furthermore, in a continuing effort to address potential adverse health effects caused by the spray program, the GOC, in conjunction

207. *Id.*

208. *Id.*

209. *Id.*

210. *See id.*

211. *See id.*

212. *Id.*

213. *See id.* As noted earlier, all data used by the DoS pertains only to the glyphosate formulation and not the actual tank mixture containing the additional surfactant Cosmo-Flux 411F.

214. *See generally id.*

215. *See id.*

216. *Id.*

217. *Id.*

with the Interamerican Drug Abuse Control Commission (“CICAD”) of the Organization of American States, was beginning an “independent, scientific study of the health effects of the spray program on people, fauna/flora, and the environment”²¹⁸

With evidence that the GOC was attempting to make the complaint resolution process more efficient and helpful, thereby satisfying the third mandate, Congress seemed poised to approve funds for the DoS aerial eradication program for 2003. However, the DoS’s report, riddled with missing information and untested assumptions, created a cacophony of skepticism once certain members of the scientific community had analyzed the report.

V. THE SCIENTIFIC COMMUNITY RESPONDS TO THE DOS REPORT

Once the DoS reported to Congress that the statutory requirements were satisfied, members of the scientific community issued reports challenging the DoS’s conclusions and expressing their belief that Congress should not provide funding for the program because “findings reveal that the State Department report repeatedly fails to assess the potential risks and effects from the aerial spraying program.”²¹⁹ According to Ann Cederstav, one critic of the DoS’s report, the first statutory requirement, that the DoS demonstrate the program was “being carried out in accordance with regulatory controls required by the [EPA] as labeled for use in the United States,” was clearly not satisfied.²²⁰ Cederstav contends that upon closer inspection, the fact that the EPA confirms that application rates for the glyphosate formulation are within the parameters listed on U.S. glyphosate labels “cannot be interpreted to mean that all label requirements are met.”²²¹ Cederstav agrees that the application “rates in Colombia are in accordance with the label for non-agricultural use in the United States,”²²² but accuses the DoS of failing to prove that the use in Colombia is appropriately categorized as “non-agricultural” use.²²³ According to Cederstav, the label of the product used in Colombia states “[t]his product is for use on plants in non-crop and non-timber areas only. . . . Not for use on crops, timber, or other plants being grown

218. *Id.*

219. Press Release, Earth Justice, Scientists Challenge Claims of U.S. State Department that Aerial Eradication in Colombia is Safe for Humans and the Environment (Sept. 30, 2002), available at <http://www.earthjustice.org/new/display.html?ID=445>.

220. Memorandum from Anna Cederstav, Staff Scientist for Earthjustice and the Interamerican Association for Environmental Defense, to the Honorable Members of Congress 2 (Sept. 23, 2002), available at <http://www.amazonalliance.org/scientific/cederstavlast.pdf>.

221. *Id.*

222. *Id.* at 3.

223. *Id.*

for sale or other commercial use”²²⁴ These conditions for “non-agricultural” use do not hold true in Colombia, where “[i]t is well-known that Colombian farmers intersperse food crops and coca crops, and plant coca in fields adjacent to food crops.”²²⁵ Cederstav does point out that Colombian law allows spraying of food crops interspersed with coca plants, but argues “[w]hile this practice may be legal in Colombia, the spraying of food crops or crop areas is certainly not consistent with U.S. ‘non agricultural’ use of herbicides”²²⁶ Even if the use of glyphosate was appropriately classified as non-agricultural, another point of contention Cederstav, and others underscore, concerns the application method.²²⁷

Echoing the concerns of Cederstav concerning the application method, Ted Schettler questions the use of fixed wing aircraft to execute eradication missions when the EPA readily admits glyphosate is applied to forestry sites in the United States using a helicopter with application by fixed-wing aircraft being a rare endeavor.²²⁸ Because application by fixed-wing aircraft creates a presumption that the missions are conducted at higher speeds and from greater altitude, Schettler calls the EPA’s lack of information and experience regarding fixed-wing application “a major gap in EPA’s ability [to] estimate exposures and to certify safety of the spray campaigns.”²²⁹

The majority of the scientific community found the most vulnerable areas of the DoS’s report to be in the portions concerning fulfillment of the statutory requirement that no unreasonable risks or adverse effects on humans or the environment exist. A major point of contention, as Schettler points out, concerns the inability of the EPA to analyze the toxicity of the tank mix.²³⁰ According to Schettler, Cosmo-Flux 411F — the adjuvant added to the tank mix, which is not registered or sold in the United States — cannot be dismissed as “not highly toxic” without guidance of what “highly toxic” means.²³¹ An elucidation of precisely what the EPA means by “not highly toxic” is important because if it is only referring to acute toxicity, then other forms of toxicity, including subchronic and chronic, were not evaluated.²³² Schettler calls for evaluations “for a variety of health endpoints [because] [e]ven single or occasional exposures to toxic

224. *Id.*

225. *Id.*

226. *Id.*

227. *See id.* at 4.

228. *See* Memorandum from Ted Schettler, Science Director of the Science and Environmental Health Network, to the Honorable Members of Congress 2 (Sept. 18, 2003), *available at* <http://www.amazonalliance.org/scientific/schettler.pdf>.

229. *See id.*; *see also* Memorandum from Anna Cederstav, *supra* note 220 at 4.

230. *See* Memorandum from Ted Schettler, *supra* note 228 at 3.

231. *See id.* at 2.

232. *Id.* at 3.

substances can have long term, delayed impacts if the exposure occurs during a window of vulnerability.”²³³ In order for such an evaluation to occur, the components of Cosmo-Flux 411F and of the glyphosate product must be identified and available for toxicity studies.²³⁴ Similarly, Cedarstav argues that, while the EPA presumes that the tank mix is not toxic to humans because 75% of the end-use product is water (when much of the concentrated formulated product is also water), the reality is that the concentrate is only diluted “by a little more than a half prior to spraying.”²³⁵ “[I]t is doubtful whether a substance that causes irreversible eye damage as a concentrated product would be rendered harmless when diluted by approximately 50%”²³⁶ The uncertainties associated with the components of the tank mix become more problematic when coupled with the potential for spray drift.

Skeptics, such as Cederstav, find the DoS’s cited safeguards to minimize spray drift, such as pilot training and permissible spray parameters, useless because the EPA was unable to verify that those safeguards are effective.²³⁷ Reiterating the point that the EPA failed to verify that the DoS safeguards worked, Schettler states that the “EPA overlooks the fact that spray drift is virtually certain to lead to some direct exposures.”²³⁸ Schettler cites the EPA’s dismissal of possible hazards from incidental hand-to-mouth exposure caused by direct spraying, based on the DoS’s assurance that pilots are instructed not to spray any fields where people are present, as an example of one of many “untested assumptions.”²³⁹ According to Schettler, because the EPA was unable to complete any quantitative risk analysis of drift potential, relying instead on the DoS’s spray drift study, the results of which were not provided to the EPA, a presumption is created that “[w]ithout this information, it is impossible to reach valid conclusions about the hazards from drift.”²⁴⁰ Rachel Massey and Jim Oldham, two additional critics of the program, recount the accidental spraying of a U.S. senator during a demonstration of herbicide application technique as evidence that the “proximity of coca fields to human habitation and work places combine to make it easy for similar accidents to happen frequently.”²⁴¹ While the EPA acknowl-

233. *Id.*

234. *Id.* at 3-4.

235. Memorandum from Anna Cederstav, *supra* note 220 at 9-10.

236. *Id.* at 10.

237. *See id.*

238. Memorandum from Ted Schettler, *supra* note 228 at 4.

239. *Id.*

240. *Id.* at 5.

241. Letter from Rachel Massey, Research Fellow, & Jim Oldham, Amazon Project Director, to Members of Congress 7 (Sept. 19, 2002), *available at* <http://www.amazonalliance.org/scientific/maold.pdf>.

edges that there is a potential for exposure caused by drift, Massey and Oldham find it problematic that no assessment of dermal or inhalation exposure, in addition to the aforementioned incidental oral exposure, were completed.²⁴² The EPA's recommendation that the DoS switch to a less toxic glyphosate product, in part because of the "lack of acute toxicity data on the tank mixture," is insufficient, according to critics, because the problem concerning the lack of tank mixture data "will not be solved by switching to a different Roundup product."²⁴³ Furthermore, the failure of the DoS to supply the EPA with the results of the six acute eye toxicity tests on the tank mixture provides more evidence that the EPA could not make an informed decision regarding the program.²⁴⁴ With the EPA's report lacking much in the way of testing, information, and consistency, it is no surprise, according to more scientific critics, that the "full range of adverse health impacts that may result from the . . . program" are not being considered.²⁴⁵

Critics complain that left out altogether of the EPA's report concerning possible negative health impacts resulting from the aerial eradication program are decreased food supplies and displacement.²⁴⁶ These critics suggest that the eighty-four distinct indigenous nations living in Colombia may face unique adverse social and cultural effects that require special attention as a result of the aerial eradication program.²⁴⁷ To bolster their claim, a report by the Colombian Public Ombudsman and numerous reports from indigenous communities are cited as evidence that legal food crops are being destroyed because of spray drift.²⁴⁸ The destruction of licit crops is crippling to the indigenous farmers who grow their own food to sustain their families and do not have the resources to purchase additional food supplies.²⁴⁹ According to the scientific critics:

Access to other sources of food and game is further restricted in cases where [sic] indigenous communities are surrounded by armed actors that restrict their movement. Therefore, damage to food crops and livestock from aerial spraying could result in serious malnutrition. As the food production cycle is closely intertwined with indigenous cosmological and ritual practices, significant agricultural disruption

242. *See id.* at 6-7.

243. *See id.* at 7.

244. *See id.*

245. *See* Memorandum from Donald Brennis, President, American Anthropological Association, Janet Chernela, Professor of Anthropology, Florida International University, & Jean Jackson, Professor of Anthropology and Head of Program, M.I.T., to Members of Congress 1 (Oct. 9, 2002), available at <http://www.amazonalliance.org/scientific/anthro.pdf>.

246. *See id.* at 7.

247. *See id.*

248. *See id.* at 1-2.

249. *See id.* at 2.

from aerial eradication would also limit the ability of indigenous peoples to practice historically derived ways of life.²⁵⁰

In many instances, displacement of communities into nearby nations, like Brazil, and Ecuador, is detrimental to the preservation of Colombia's distinct cultures because the dispersed are peoples from the tropical forest environments and higher elevations.²⁵¹ Specifically, critics cite the indigenous communities' reliance on medicinal plants for medical care (with little access to formal medical treatments) that are reportedly being destroyed, the importance of drinking and bathing water from small streams and rivers that may inadvertently be sprayed, and the fact that most indigenous families do not own radios, so consequently will not hear the announcements concerning a spraying, as evidence why the EPA's report was flawed.²⁵² The potential for adverse effects on water bodies, such as the indigenous communities', raises another area of concern for DoS critics: the environment.

In one report critical of the DoS, it is declared that

[f]ollowing a thorough review, we find that the ecological risk assessment provided in [the DoS] report does not substantiate the conclusion that the chemicals used in the aerial fumigation of coca, in the manner in which they are applied, do not pose unreasonable risks or adverse effects on the environment.²⁵³

Some points of contention, cited by critics Ivette Perfecto and John Vandermeer, are that the toxicological and environmental fate studies cited in the EPA review were based on the North American species and temperate ecosystems" and not on field studies in Colombia; that the EPA ignored scientific literature that showed negative effects caused by glyphosate on various ecological levels; and, that the report focused on glyphosate as the active ingredient instead of the complete glyphosate formula.²⁵⁴ Perfecto and Vandermeer cite a study of fish that showed "glyphosate toxicity doubled when the temperature of the water increased from 45 degrees to 63 degrees Fahrenheit," in questioning why the EPA report failed to evaluate the potential for increased glyphosate toxicity in the warm climates of a tropical country.²⁵⁵ Studies showing glyphosate's adverse effects on aquatic and soil biota, toxicity in mammals (through inhalation routes rather than the

250. *See id.*

251. *See id.*

252. *See id.* at 3.

253. Memorandum from Ivette Perfecto, Associate Professor, School of Natural Resources and Environment, University of Michigan & John Vandermeer, Margaret Davis Collegiate Professor, Department of Ecology and Evolutionary Biology, University of Michigan, to Members of Congress 1 (Sept. 18, 2002), available at www.amazonalliance.org/scientific/pv.pdf.

254. *See id.* at 2.

255. *Id.*

EPA-cited studies investigating the oral or dermal exposure routes), adverse impacts on reptiles (“negative reactions on iguanas eating dandelions sprayed with glyphosate”), and the risks concerning Colombia’s endemic plant species, are cited as evidence that the EPA’s report was insufficient.²⁵⁶

Negative effects on Colombia’s plants and crops, especially considering the EPA’s admittance that spray drift was likely to cause damage to non-target plants and crops even with low application rates of glyphosate, was a particularly troublesome area for the critics.²⁵⁷ According to critics, specific problems neglected by the EPA report, as a result of spray drift, on non-target plants and animals, include:

[i]ncreased deforestation rates that may result when farmers clear new areas to cultivate food crops after their crops have been damaged by the spraying; [r]eductions in the habitat value of the ecological matrix of farms and at the landscape level, including the degradation of biological corridors between and around farm fields; [i]mpacts on endangered, threatened, and/or endemic species [and] [t]he destruction of habitats for endemic birds, plants, and other organisms would result in their global extinction; [i]ndirect impacts on organisms that use those habitats [while] [t]he loss of plant biomass from aerial spraying would lead to a loss of diversity of insects, mammals, birds, and other organisms that utilize these habitats.²⁵⁸

While the reports, memoranda, and letters issued by the scientific community expressed similar concerns regarding the insufficiency of the EPA’s report, there was significant data for the members of Congress in control of the purse strings to take into consideration. Despite the countervailing evidence provided by the scientific community, in the end the funds were approved for the DoS to continue its spraying program. However, the reports cannot be seen as ineffectual because Congress responded with more stringent statutory requirements for future funding.²⁵⁹

256. See *id.* at 3.

257. See RESPONSE FROM EPA ASSISTANT ADMINISTRATOR JOHNSON TO SECRETARY OF STATE, *supra* note 77; see also Letter from Rachel Massey & Jim Oldham, *supra* note 241 at 8; memorandum from Ivette Perfecto & John Vandermeer, *supra* note 253 at 4; Memorandum from Anna Cederstav, *supra* note 220 at 10; Letter from David B. Sandalow, Executive Vice President World Wildlife Fund, to United States Senator Joseph Biden (Sept. 27, 2002), available at <http://www.amazonalliance.org/scientific/wwf.pdf>.

258. Memorandum from Ivette Perfecto & John Vandermeer, *supra* note 253 at 4 (citations omitted).

259. See generally Foreign Operations, Export Financing, and Related Programs Appropriations Act, Division E, Consolidated Appropriations Resolution of 2003, Pub. L. No. 108-7, 117 Stat. 11, 172-74 (2003).

VI. FUTURE OF THE AERIAL ERADICATION PROGRAM

A. New Statutory Requirements & the Impact of Judicial Decisions

For the 2003-04 fiscal year, Congress provided the DoS funding, in assisting the GOC to “support a unified campaign against narcotics trafficking, against activities by organizations designated as terrorist organizations . . . , and to take actions to protect human health and welfare in emergency circumstances, including undertaking rescue operations[.]”²⁶⁰ Congress provided further:

[t]hat not more than 20 percent of the funds appropriated by this Act that are used for the procurement of chemicals for aerial coca and poppy fumigation programs may be made available for such programs unless the [SoS], after consultation with the Administrator of the [EPA], certifies to the Committee on Appropriations that: (1) the herbicide mixture is being used in accordance with EPA label requirements for comparable use in the United States and any additional controls recommended by the EPA for this program, and with the Colombian Environmental Management Plan for aerial fumigation; (2) the herbicide mixture, in the manner is being used, does not pose unreasonable risks or adverse effects to humans or the environment; (3) complaints of harm to health or licit crops caused by the fumigation are evaluated and fair compensation for meritorious claims; and such funds may not be made available for such purposes unless programs are being implemented by the United States Agency for International Development, the [GOC], or other organizations, in consultation with local communities, to provide alternate sources of income in areas where security permits for small acreage growers whose illicit crops are targeted for fumigation[.]²⁶¹

A summary of the major requirement changes Congress made from the previous year’s appropriation are as follows:

- (1) The optional ability for the DoS to consult with the Centers for Disease Control and Prevention, is not included;
- (2) Poppy, and not just coca, is accounted for in the fumigation program;
- (3) The herbicide mixture (as detailed earlier, the subject of much criticism centered on the EPA’s analysis of the individual chemicals and not the final tank mix itself) must meet EPA label requirements;
- (4) The herbicide mixture must meet the EPA label requirements for “comparable” use in the United States, subject to any additional EPA recommended controls;

260. 117 Stat. at 172.

261. 117 Stat. at 173-74.

- (5) The herbicide mixture use must be in accordance with the Colombian Environmental Management Plan.²⁶²

While these new requirements suggest that the DoS may have to present a more thorough accounting of its program, additional factors also indicate that the program is under increasingly heavy scrutiny.

On May 13, 2003, Colombia's Constitutional Court ruled that the government had to warn indigenous people before the commencement of spraying in their territories.²⁶³ While the court denied the petitioners request to halt the spraying, it did call for a three month period to "have conferences and to stage tests intended to explore the future of aerial fumigation with Colombian authorities"²⁶⁴ Just two months later, on June 13, 2003, fumigation opponents won another legal battle when a Bogotá court ordered the suspension of the aerial eradication program.²⁶⁵ The court ruled that the spraying had to be suspended immediately, albeit temporarily, because the GOC had failed to conduct the necessary studies to show that the spraying was not harmful to the environment or the community.²⁶⁶ "The judges said that their aim was not to halt the anti-drug spraying, but rather to ensure that those activities do not threaten people's rights or the environment."²⁶⁷ Therefore, "[t]he suspension will [only] last while the Environmental Management Plan, imposed by the Environment Ministry, is applied."²⁶⁸ The monumental decision, hailed by the program's critics as affirmation that the spraying poses adverse human health and environmental concerns, provided Ann Cederstav, one of the most fervent opponents of the program, the ability to issue Congress some stern advice:

262. Compare 117 Stat. at 173-74, with 115 Stat. 2118.

263. Organización de los Pueblos Indígenas de la Amazonía Colombiana v. Presidencia de la República Sentencia SU383/03, Referencia: expediente T-517583, (Bogotá D.C, May 13, 2003); see also Press Release, Council on Hemispheric Affairs, Bogotá Court Rules to End Harmful Aerial Fumigation Program (July 1, 2003), at <http://www.scoop.co.nz/mason/stories/WO0307/S00011.htm>.

264. Press Release, Council on Hemispheric Affairs, *supra* note 263.

265. See Claudia Sampedro y Hector A. Suarez v. Ministerio Del Medio Ambiente et al, Referencia: 01-0022, (Tribunal Administrativo De Cundinamarca, Bogotá D.C, June 13, 2003); See also Press Release, Earthjustice, Colombian Court Orders Suspension of Coca Spraying, (June 26, 2003), at <http://www.earthjustice.org/news/print.html?ID=620>.

266. See *Court Orders Suspension of Spraying of Drug Crops on Health Grounds*, BBC MONITORING AMERICAS, June 28, 2003, available at 2003 WL 58760794, ¶ 1, 3 (stating the source for the BBC report came from the Colombian Caracol radio web site on June 26, 2003).

267. Yadira Ferrer, *Colombia: Uribe Defies Court on Drug Crop Fumigation*, INTER PRESS SERV., July 15, 2003, available at 2003 WL 6916768, ¶ 21.

268. *Court Orders Suspension of Spraying of Drug Crops on Health Grounds*, *supra* note 266 at ¶ 2.

The US Congress has required the State Department to evaluate environmental and health impacts of Plan Colombia. This decision by a court in Colombia must be taken into account by the U.S. State Department. . . . In light of the evidence presented and the court's clear decision on this matter, the [DOS] cannot certify to Congress that the herbicide mixture, in the manner it is being used, poses no unreasonable risks or adverse effects to humans or the environment, or that the herbicide is being used in compliance with the Environmental Management Plan for the program. . . . It would be highly irresponsible for the United States to continue the eradication program²⁶⁹

However, Cederstav, and other critics of the program, did not have to wait long to find out what course of action the GOC and the United States would pursue.

President Alvaro Uribe, in what some critics cited as outright disobedience of the law, cited commitments to the international community and refused to cease the spraying of illicit crops.²⁷⁰ Uribe, despite his detractors' claims of flouting the law, cited the legality of continued spraying during the period of time between the immediate appeal by the GOC of the Cundinamarca Court decision, and the appellate level decision.²⁷¹ Opponents of Uribe's decision decried his actions on the grounds that because human health and the environment were at stake, he should obey the Cundinamarca Court's decision.²⁷² The United States supported Uribe's decision when DoS spokesman, Charles Barclay, defended the fumigation effort as not posing a danger to Colombia's people or environment.²⁷³

B. Is the Program Working?

While final resolution concerning the constitutional legitimacy of the aerial eradication program remains unresolved, criticism about the continued spraying persists. Some critics suggest that the overall plan, initiated with Plan Colombia, has failed to stop the flow of cocaine from Colombia.²⁷⁴ Citing the cost to Colombia's environment and the negative human health effects, some critics argue that because the "price, purity, and availability of cocaine in the United States has remained unchanged," during the life of Plan Colombia, the program has not accomplishing anything.²⁷⁵ While most experts agree that Colombia's delicate ecological system is being damaged, less agreement exists in terms of

269. Press Release, Earthjustice, *supra* note 267 at ¶¶ 1-2.

270. Ferrer, *supra* note 267 at ¶¶ 1-2.

271. *See id.* at ¶ 4.

272. *See id.* at ¶ 6.

273. *See id.* at ¶ 22.

274. *See, e.g.,* Bill Marx, *Plan Fails to Curb Flow of Colombian Drugs*, BUFF. NEWS, Nov. 25, 2003, at B11, 2003 WL 6466690 (suggesting that "the plan to curb the flow of cocaine from Colombia has shown little success.").

275. *See, e.g., id.*

which is the greater evil—the drug traffickers or the herbicide.²⁷⁶ Quantifying how much environmental damage is occurring is difficult because the precise tools of calculation are only now starting to be implemented.²⁷⁷ Early indicators, using some of the new quantification tools, suggest that for every hectare planted with coca, three hectares of forest must be cleared.²⁷⁸ This statistic seems to suggest, as the DoS contends, that the illicit crop growers are more responsible for the environmental damage than the fumigation program.²⁷⁹ Recently, a GOC official stated that the fumigation program may cause local impacts (like on water supplies), but deforestation causes global impacts on climate and diversity.²⁸⁰ According to the GOC official, while deforestation occurs on the higher elevations that negatively impacts freshwater, the burning technique employed by cultivators following deforestation compounds the dilemma.²⁸¹ Yet critics continue to insist that the DoS sponsored fumigation program is the “greater evil.”²⁸²

A study conducted by Ecuador’s Pontificia Catholic University on the Ecuadorian population living along the Colombian border, found that glyphosate has caused damage to legal crops and water sources, plus deformities in babies.²⁸³ The study also analyzed the medical history and blood samples of twenty-two women, ten from Ecuador and twelve from Colombia, who claimed to have been exposed to the aerial spraying.²⁸⁴ According to the study, the women exhibited symptoms of intoxication from glyphosate contact, and the blood samples revealed genetic damage in 36% of the cells in their bodies.²⁸⁵ The GOC counters that glyphosate has been proven to have a minimal level of toxicity, and is commonly used in Colombia by legal crop farmers.²⁸⁶ The GOC contends that herbicides like endosulfan and paraquat, used by illegal groups for weed control, are more detrimental because of their persistence and longevity in the environment, unlike the relatively short life cycle of glyphosate.²⁸⁷ Furthermore, the manufacturing of drugs from illegal crops using chlorates and petroleum derivatives, con-

276. See, e.g., *id.* at ¶ 1.

277. See, e.g., *id.* at ¶ 1-3.

278. See, e.g., *id.* at ¶ 1.

279. See generally *id.*

280. *Id.*

281. See *id.* .

282. See *id.* (discussing the molecular genetics testing conducted by the Pontificia Catholic University in Ecuador, which found significant genetic damage as a result of the fumigation program).

283. *Id.*

284. *Id.*

285. *Id.*

286. *Id.*

287. *Id.*

taminates the environment.²⁸⁸ While arguments concerning the environmental issue continue to abound, displacement and overflow of Colombia's population into nearby countries is a growing concern in the eradication debate.²⁸⁹

Displacement, noted by the scientific critics of the DoS's 2002 report, has risen thirty-six fold since 2000, with a total of 15,000 people fleeing Colombia between January and September 2003.²⁹⁰ One human rights group claims that the number of internally-displaced Colombians soared from one and one-half million to three million during the past decade.²⁹¹ While, the displacement problem is inextricably linked to the narcoterrorism violence, it is harder to estimate the number of displaced as a direct result of the fumigation program.²⁹² The right-wing paramilitaries and the leftist guerrillas continue to fight for control over territory, which not coincidentally (due to the narcotics and terrorism connection) are the most targeted spray areas.²⁹³ The human rights groups' claim that civilians are forced to abandon fumigated areas for health and safety concerns.²⁹⁴ With Ecuador receiving the majority of the displaced, other international community members, including the European Union ("EU"), have been more critical of the DoS-sponsored program.²⁹⁵ The EU was initially supposed to provide funding for Plan Colombia, but instead refused to join the program citing social improvement programs as more effective.²⁹⁶ While the EU criticizes the fumigation efforts, the UN released a report claiming that Colombia's coca cultivation had been cut by one-third in seven months.²⁹⁷ The 32% drop, occurring from January through July of 2003, was attributed to the spray program.²⁹⁸ While the UN praised the progress, it said more alternative growing programs were needed to help the farmers shift away from drug crops.²⁹⁹ The UN report esti-

288. *Id.*

289. See Yadira Ferrer, *Rights-Colombia: More War Fugitives Seeking Political Asylum*, INTER PRESS SERV., Jan. 7, 2004, 2004 WL 59282176.

290. *See id.*

291. *Id.*

292. *See, e.g., id.*

293. *See id.*

294. *Id.*

295. *See id;* see also, *EU Foreign Policy Chief Criticizes US Drug Eradication Program*, AGENCE FRANCE-PRESS, Jan. 22, 2004, available at 2004 WL 66165931.

296. *See EU Foreign Policy Chief Criticizes US Drug Eradication Program, supra* note 295.

297. Cesar Garcia, *Colombia's Coca Output Has Dropped, U.N. Says; Spray-Plane Use Credited*, TALLAHASSEE DEMOCRAT, Sept. 18, 2003, available at 2003 WL 62467396.

298. *Id.*

299. *Id.*

ated that at the current rate of spraying, there could be a 50% drop in coca production in 2003.³⁰⁰

In October, 2003, the United States Congress' Foreign Relations Committee held a hearing in an effort "to assess the achievements of the first three years of Plan Colombia."³⁰¹ The hearing made no mention of the adverse Colombian court decisions and referred to the "popular resistance to aerial eradication of coca crops . . . [and] internally displaced people," as "challenges" facing President Uribe.³⁰² During the hearing, the aerial fumigation program was credited with "virtually eliminat[ing] the coca crop in the Putamayo region, once home to world's largest nucleus of illicit cultivation."³⁰³ According to DoS testimony, 140,000 hectares of coca will have been sprayed by the end of 2003.³⁰⁴ The DoS referred to the present time as the "tipping point in the history of the international drug war" and claimed that the fumigation program is starting to systematically destroy massive amounts of coca, all while maintaining a strict adherence to environmental guidelines.³⁰⁵ In fact, the DoS asserted, even domestic progress is evident based on coca eradication because "there has been a drop in the wholesale street value of cocaine getting into this country what was roughly 25% between 2001 and 2002."³⁰⁶ This drop in wholesale street cocaine is equivalent to \$5 billion worth of cocaine on the street.³⁰⁷

One brief question concerning the use of alternative development programs was raised in the context of the "enormous gap between the areas subject to aerial fumigation and [the] much smaller areas in which alternative development[al] programs are taking place."³⁰⁸ Testimony in response to the inquiry

300. *Id.*

301. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs of the S. Foreign Relations Comm.*, 108th Cong. (2003), (opening statement by Sen. Coleman, Chairman, Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs) 2003 WL 22463373.

302. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs of the S. Foreign Relations Comm.*, 108th Cong. (2003), (statement by Sen. Dodd, Ranking Member, Foreign Relations Comm.), 2003 WL 22463373.

303. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs of the S. Foreign Relations Comm.*, 108th Cong. (2003), (testimony of Robert Charles, Assistant Sec'y of State for the INL), 2003 WL 22463373.

304. *Id.*

305. *Id.*

306. *Id.*

307. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs of the S. Foreign Relations Comm.*, 108th Cong. (2003) (testimony of Ass. Sec. of State for the INL Robert Charles) 2003 WL 22463373.

308. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs of the S. Foreign Relations Comm.*, 108th Cong. (2003) (question from Sen. Feingold), 2003 WL 22463373.

cited 33,000 families as directly benefiting from alternatives, ranging from voluntary eradication to finding alternative markets and products for cultivation.³⁰⁹ When pressed on the issue of how many families have been affected by the fumigation, testimony only elicited “[i]n the entire, I really don’t know, we can try to get that information.”³¹⁰

C. Conclusion – Commentary

As debate continues, there can be no doubt the DoS, and the various other agencies involved in the fumigation program, must do more to ensure that important answers to pertinent questions become a reality. Opponents of the fumigation program have achieved much progress through the Colombian judicial system, new Congressional funding requirements, and international support. Yet, the DoS and the GOC continue to advocate the propriety of maintaining the program at full throttle. The DoS continues to advocate the program’s effectiveness, while opponents decry its futility and destructiveness. In the end, both sides, bolstered by empirical data supporting their respective claims, seem so entrenched in their ideological positions that neither can see beyond their own context. For example, population displacement is explained by one side as predominantly a result of rebel violence, while the other side blames the fumigation program. Similarly, environmental damage, and which group is causing more of it, the rebels or the fumigators, remains a source of contention.

On its surface, what appear to be different points of view have instead caused the DoS and its detractors to lose sight of the real problem. Sure, both sides purport to understand that the rebel factions present problems anathema to Colombia’s quest for stable democracy. Yet the rebels, intent on rendering Colombia’s democratic origins an anachronistic antiquity, continue to savage the countryside and force peasant farmers to cultivate illicit crops. While the U.S. government, apparently content with the DoS’s version of herbicidal “shock and awe,” has an efficient strategy to undercut the rebels financial base without directly confronting the rebels, the fumigation opponents have not yet voiced a coherent strategy for dealing with the rebels. The reality is that idealism pervades each party’s perspective, whether evidenced by the DoS’s current objectives or in its opponents’ desire for environmental and health preservation.

309. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs. of the Senate Foreign Relations. Comm.*, 108th Cong. (2003) (testimony of Adolfo Franco, Assistant Adm’r for AID), 2003 WL 22463373.

310. *U.S. Policy Toward Colombia: Hearings Before the Subcomm. on W. Hemisphere, Peace Corps & Narcotics Affairs of the S. Foreign Relations Comm.*, 108th Cong. (2003) (testimony of Robert Charles, Assistant Sec’y of State for the INL), 2003 WL 22463373.

After decades of war, human rights atrocities, forced servitude, and death, it is time for idealism to give way to pragmatism. It is this author's contention that pragmatism means the unequivocal surrender or military defeat of all rebel factions. Without this, Colombia's paradox appears destined for perpetuity.

VII. EPILOGUE

Since the original authoring of this Note, a second "Report on Issues Related to the Aerial Eradication of Illicit Coca and Opium Poppy in Colombia" was issued to Congress.³¹¹ The report was issued in response to the new Congressional mandates contained within the legislation described in section VI of this Note.³¹² The scientific community again responded to the report with analysis disputing the contentions of the DoS concerning the aerial eradication program.³¹³ The United States continues to pursue an aggressive policy in Colombia, calling the drug trade a "profit-making business, one whose necessary balance of costs and rewards can be disrupted, damaged, and even destroyed."³¹⁴ The United States continues to believe that reducing the supply line through eradication will make "drugs more expensive, less potent, and less available."³¹⁵ Colombia continues to pursue a policy aimed at "[cutting] off the revenue that sustains armed groups of the extreme right and extreme left, as a milestone on the way to the defeat and elimination of the guerrillas who control the remote areas of Colombia and who are slowing the country's economic and democratic development."³¹⁶

While the United States and Colombian governments cite supply side reduction as the most effective way to undermine the efforts of the drug traffickers, the methodology, in terms of the aerial eradication program, is assiduously defended through terminology connoting simplicity. For example, the United States describes coca crop as "critically vulnerable," because the "entire crop is visible from the air; most coca grows on terrain level enough to permit effective

311. See BUREAU FOR INT'L NARCOTICS & LAW ENFORCEMENT AFFAIRS, U.S. DEP'T OF STATE, REPORT ON ISSUES RELATED TO THE AERIAL ERADICATION OF ILLICIT COCA & OPIUM POPPY IN COLOMBIA (2003), available at <http://www.state.gov/g/inl/rls/rpt/aeicc/c10854.htm>.

312. See 117 Stat. at 172-74.

313. See, e.g., ANNA CEDERSTAV & ASTRID PUENTES, INTERAMERICAN ASS'N FOR ENVTL. DEF., THE PLAN COLOMBIA AERIAL ERADICATION PROGRAM FOR ILLICIT CROPS — AN ANALYSIS OF THE 2003 DEPARTMENT OF STATE CERTIFICATION TO CONGRESS (2004), available at http://www.aida-americas.org/templates/aida/uploads/docs/AIDA_on_DOS_2003_certification.pdf.

314. NAT'L DRUG CONTROL STRATEGY, THE WHITE HOUSE, DISRUPTING THE MARKET: ATTACKING THE ECONOMIC BASIS OF THE DRUG TRADE 31 (2004), available at <http://www.whitehousedrugpolicy.gov/publications/policy/ndes042004ndcs.pdf>.

315. *Id.*

316. *Id.* at 35.

spray[ing] operations using a crop duster aircraft to dispense herbicides; and the coca brush is a perennial that requires roughly twelve months to mature after initial planting.”³¹⁷ These factors exemplify the reason why opposition groups accuse the U.S. government of simply glossing over the difficulties associated with a program as massive as the aerial eradication effort. However, with the United States touting a “record-setting pace” of illicit crop eradication in 2003 and the GOC claiming its sustained pressure on rebel groups is pushing them deeper into the recesses of the jungles, the program is proceeding at nothing less than full throttle.³¹⁸

With the program proceeding despite adverse judicial decisions, sustained opposition from members of the scientific community, and calls for its moratorium by citizens of Colombia, the United States and Colombian governments are undoubtedly aware of the concerns its resolve engenders. Yet, in summarizing its record-setting 2003 spraying, the United States claims to have resolved 50% of the 4,000 complaints of spray damage to legitimate crops.³¹⁹ Incredibly, only five of those cases were deemed to have merit so that compensation was afforded.³²⁰ Critics of the program would argue that this statistic is representative of the disingenuousness in which the U.S. government has administered its support in Colombia. The United States would counter that the statistic bolters its claim that it is running an efficient program. With increased spraying in the face of stepped-up rebel attempts to shoot down spray and escort aircraft, coupled with a sense of urgency by the GOC and members of Congress that drug eradication in Colombia is turning a corner rather than teetering on the precipice of human and environmental disaster, conflicting interpretations of statistics, application, and execution, appear certain to persist.³²¹

317. *Id.* at 35-36.

318. *See* BUREAU FOR INT’L NARCOTICS & LAW ENFORCEMENT AFFAIRS, U.S. DEP’T OF STATE, INT’L NARCOTICS CONTROL STRATEGY REPORT: COLOMBIA § I (2004), available at <http://www.state.gov/g/inl/rls/nrcrpt/2003/vol1/html/29832pf.htm>; *see also* AP, *Rebels Continue to Disarm in Colombia*, October 7, 2004, available at www.foxnews.com/printer_friendly_story/0,3566,134698,00.html.

319. *See id.* at § III.

320. *Id.*

321. *See generally id.* (stating there have been increased arrests and extraditions as a result of increased efforts of the U.S. and GOC).