



Interamerican Association for Environmental Defense
Asociación Interamericana para la Defensa del Ambiente

Rethinking Plan Colombia:

Critical Omissions in the CICAD Environmental and Health Assessment of the Aerial Eradication Program in Colombia

The 2005 Environmental and Human Health Assessment of the Aerial Spray Program for Coca and Poppy Control in Colombia, prepared for the Inter-American Drug Abuse Control Commission (CICAD) of the Organization of American States, provides a long-overdue analysis of many components of the spray program. However, the study does not assess, in whole or part, many of the greatest potential ecological and human health risks posed by the aerial eradication program. Thus, **the CICAD study does not provide conclusive evidence that the spray program is safe for the environment or human health. Rather, it underscores the urgency of conducting additional analyses to assess potentially severe impacts of the program.** These potential impacts include:

- Increased deforestation from illicit crop displacement,
- Declines in threatened amphibian populations in spray areas,
- Adverse effects on endangered and endemic species (those found only in Colombia),
- Harmful health effects from secondary impacts of the spray program, such as displacement and loss of food and legal cash crops.

In the face of these unknown and potentially grave ecological and health impacts, it is imperative that policy-makers reevaluate continued support for the aerial eradication program. This memo details some of the most critical omissions in the CICAD study.

No Assessment of Environmental Risk from Displacement of Illicit Crops, Deforestation and New Roads

The CICAD study fails to address the most ominous environmental threat posed by the aerial eradication program – the ongoing displacement of coca fields, which increases deforestation, spreads contamination from coca cultivation and processing chemicals into remote forested areas, and opens wilderness areas to unplanned settlement.

While the study clearly states that the “greatest environmental risks” of the “coca and poppy production and eradication cycle” are “clear-cutting and burning and displacement of the natural flora and fauna,”¹ it does not consider the abundant data indicating that aerial spraying is displacing coca crops, nor does it address the ecological and health risks associated with crop displacement.

Both current and historical data indicate that aerial eradication of illicit crops will not permanently halt drug production, but will displace illicit crops to more remote areas of Colombia and the region.² According to the United Nations Andean coca surveys for 2004, in Colombia, “the survey results alert us to the significant growth of new coca crops in new areas and/or in areas of previous cultivation. **At the national level, the comparison of the location of the coca fields in 2003 and 2004 showed that about 60% of the fields were new,** indicating the important mobility of this crop in Colombia.”³ Regionally, coca cultivation surged dramatically. In Peru, the total area under coca cultivation rose by 14% in one year to 50,300 hectares. During the same time period, coca cultivation in Bolivia “increased by 17%, raising the extent of cultivation to

27,700 ha -- the highest since 1998.”⁴ **Obviously, given the extent to which new coca fields are being created, the question of long-term ecological impact of aerial coca and poppy eradication is critical.**

Significant Potential Risk to Aquatic Organisms, Particularly Amphibians

According to the CICAD study, “[m]oderate risks could occur in aquatic organisms in shallow surface water that are over-sprayed during the eradication program.”⁵ The study further states that “recent studies have reported that amphibians, such as frogs, are amongst the most sensitive aquatic organisms with respect to formulations of glyphosate such as Roundup and Vision.”⁶

With 698 species of amphibians, Colombia has the second highest diversity of amphibians in the world. Nearly 330 of these species are endemic – found only in Colombia.⁷ As is the case throughout the world, amphibian populations in Colombia are declining dramatically. Almost 30% of Colombian amphibians are threatened with extinction from habitat loss, fungal diseases, environmental contaminants, and other causes.⁸ Evidence now suggests that the aerial spraying program may constitute another serious threat to Colombia’s amphibian populations.

A 2005 study found that the presence of Roundup in pond microcosms caused “widespread death for many species” of aquatic organisms, “eliminating two species of tadpoles and nearly exterminating a third species.”^{9,10} According to the study’s author, the concentrations of Roundup that were toxic to the tadpoles could be expected to result from spraying in some agricultural settings, based on calculations by the manufacturer, Monsanto. Subsequent studies, currently in press, found 40% amphibian mortality using only one-third as much Roundup, and found that **Roundup can be highly lethal to terrestrial amphibians as well.**¹¹

To understand the significance of these findings, it is important to note that **many amphibians reproduce in small, temporary pools that may contain only 6 inches of water.**¹² **Certainly pilots in Colombia would find it impossible to avoid such shallow water bodies** when these are adjacent to, interspersed with, or in close proximity to coca and poppy fields, particularly considering that “data on the proximity of surface waters to coca fields [is] not available.”¹³

Despite compelling evidence of potential risk to aquatic organisms, particularly amphibians, **the CICAD study does not analyze the proximity of shallow surface waters to coca and poppy fields, include test findings of the spray mixture’s toxicity to Colombian amphibians, or contain data from field investigations of amphibian populations in spray areas.** Rather, the authors only recommend that a GIS analysis of the proximity of surface waters to illicit crops be conducted as a first step to assessing potential risks. Until an appropriate assessment is conducted, the extent of risk to aquatic organisms, including Colombia’s amphibian populations, will remain unknown.

No Assessment of Cumulative Risks to Biodiversity, Endangered or Endemic Species

Colombia has tremendous biodiversity and boasts the second largest number of species in the world. Of the roughly half million plant species in Colombia, approximately one third are endemic.¹⁴ The likelihood that the spray operations will affect these species is high given that “coca and poppy fields are usually located in remote areas and often surrounded by natural habitats,” and that some spraying may overlap with biodiversity hotspots.¹⁵ **According to the CICAD study, “very many endemic plant and animal species [are] associated with National Parks and indeed with eradication areas.”**¹⁶ In 2004, coca cultivation was found in 13 Colombian National

Parks, covering 5,400 hectares (13,338 acres).¹⁷ While manual eradication is being proposed or implemented in some parks, the spraying of other parks may be imminent.¹⁸

Despite Colombia's extraordinary biodiversity, and the potential that critical species and highly diverse ecosystems will be impacted by the spray operations, **the CICAD study does not assess cumulative impacts of the spray program on biodiversity, endangered and endemic species, critical habitat, or fragile ecosystems.** Consideration of such risks to endangered species and sensitive flora and fauna in national parks would be included in a comprehensive environmental impact assessment of a widespread spray program to eliminate pests in the United States. **Without assessing impacts on these threatened species in Colombia, proponents of the spray program cannot truthfully claim that aerial eradication in Colombia is benign, or that we are taking the same steps to protect biodiversity in Colombia that we do in the United States.**

No Analysis of Health Risks from Secondary Impacts such as Displacement and Loss of Food Crops

The health assessment in the CICAD study is limited to effects potentially caused by physical exposure to the spray mixture. This assessment fails to consider health effects caused by secondary impacts of the spray program, including displacement of families, loss of food crops and grazing areas for livestock, contamination of water sources, and increased poverty where development aid is non-existent or insufficient.

The potential significant health risks from these secondary impacts of the spraying are not considered even in a cursory fashion in the study. Rather, the study presents a rough comparison of potential direct health effects from the eradication spray with potential health impacts of the illicit crop production and cultivation cycle (i.e. clear cutting and burning). **The secondary impacts should have been considered because they are clearly caused by the spraying, and arguably pose greater risk to Colombian health and well being than does direct exposure to the spray mixture.** Moreover, as discussed above, the spraying program also causes additional clear cutting and burning due to crop displacement.

Additionally, the health assessment in the CICAD study is hindered by significant uncertainties, such as the absence of field data regarding exposure to bystanders and workers in freshly sprayed fields. The study recommends that these exposures be measured to conduct a more accurate assessment.

Inadequate Data on Spray Drift and Accidental Overspray

There are various indications that spray operations have caused significant damage to non-target vegetation, including food and legal cash crops, grazing fields, and natural habitat. This is not surprising given that glyphosate, the active ingredient in the herbicide mixture, kills or stunts the growth of virtually all plants if a sufficient dose is applied.

From October 2003 to February 2005, Colombian citizens submitted nearly 900 claims to the Colombian National Directorate of Narcotics (DNE) alleging damage from aerial spray to food and cash crops, grazing fields, and tree plantations.¹⁹ According to a Colombian government official who participated in claim investigations, a substantial number of these recent claims concern the destruction of food and cash crops that are not located near coca or poppy plants and thus, are the result of spray drift or overspray.²⁰

In a 2003 report, the U.S. Environmental Protection Agency (EPA) indicated that, with a 10 mph wind, spray drift could kill or damage half of young plants up to 200 feet downwind of poppy spraying and up to 550 feet downwind of coca spraying. The EPA further cautioned that steep slopes in poppy growing areas would make spray drift from poppy spray operations likely to extend even greater distances than drift associated with coca eradication.²¹

Despite these reasons for concern, the CICAD study does not consider any claims of damage to non-target vegetation, provide models of spray drift, or include new data from field investigations on off-target spray. Rather, the CICAD study cites just two data sources and concludes that spray drift will be minimal. The first source is a study conducted in Canada in 1990 that examined off-target residues from aerial spraying using helicopters, which can fly at lower speeds and altitudes than the fixed-wing aircraft used in Colombia. The second source is a 2002 field study conducted by the U.S. government that contains estimates of accidental overspray in a limited number of coca fields in Colombia.

Considering the diversity of topography and weather conditions in coca and poppy growing areas in Colombia, drift modeling by the U.S. EPA, and the claims of damage to non-target vegetation, the CICAD study does not provide convincing evidence that spray drift will be minimal. Comprehensive field tests must be conducted to accurately assess risks to food and legal cash crops and other non-target vegetation from the spray program.

Conclusion

As is evident from discussions in this critique, the CICAD study did not provide a comprehensive assessment of potential ecological or health impacts from the aerial eradication program in Colombia. Many potentially severe impacts, such as increased deforestation and adverse impacts to aquatic organisms and endangered species, were not considered. Thus the report does not provide evidence that the aerial spray program is harmless to people or the environment. **As a matter of ethics and sound public policy, the spray program should be suspended unless adequate assessments can demonstrate that the program is not harming the Colombian people, or the country's natural resources and tremendous ecological wealth.**

(1) Solomon et al, Environmental and Human Health Assessment of the Aerial Spray Program for Coca and Poppy Control in Colombia, Report Prepared for the Inter-American Drug Abuse Control Commission of the Organization of American States, March 31, 2005. p. 11. (2) Rocio Moreno-Sanchez et al. "An Econometric Analysis of Coca Eradication Policy in Colombia," *World Development* Vol. 31, No. 2; Graham Farrell, "A global empirical review of drug crop eradication and United Nations' crop substitution and alternative development strategies," *Journal of Drug Issues*, Spring 1998 Vol 28, Issue 2, United Nations Office on Drug Control and Crime, Andean Coca Surveys, 2001-2004. For more information, see Betsy Marsh, Latin American Working Group, "Going to Extremes," March 2004. (3) United Nations Office on Drugs and Crime, "Colombia Coca Survey for 2004," June 2005, p.3. (4) UN Office on Drugs and Crime, "Bolivia Coca Survey for 2004," June 2005. p.1. (5) Solomon et al, p.11. (6) Solomon et al, p.93. (7) Global Amphibian Assessment. <http://www.globalamphibians.org/> Site visited 6/20/05. (8) Young et al, "Disappearing Jewels: The Status of New World Amphibians," Executive Summary. NatureServe. 2004. <http://www.natureserve.org/publications/disappearingjewels.jsp>; Global Amphibian Assessment. (9) RA Relyea, Responses to Monsanto's Concerns, <http://pitt.edu/~relyea/Roundup.html>. Site visited 6/15/05. (10) RA Relyea, "The Impact of Insecticides and herbicides on the biodiversity and productivity of aquatic communities." *Ecological Applications* 15:6198-627, 2005. (11) RA Relyea, Responses to Monsanto's Concerns. (12) RA Relyea, Responses to Monsanto's Concerns. (13) Solomon et al, p. 11. (14) Humboldt Institute, "Biodiversidad en Colombia," <http://www.humboldt.org.co/chmcolombia/biodiversidad.htm>. Site visited 6/05. (15) Solomon et al, p. 88. (16) Solomon et al, p. 80. (17) UN Office on Drugs and Crime, "Colombia Coca Survey for 2004," June 2005, p.8. (18) Hugo Garcia, *El Espectador*, May 11, 2005, available at: http://www.elespectador.com/historico/2005-05-11/contenido_MI-1101.htm, reporting that the Colombian Minister of Interior and Justice confirmed the government's decision to spray National Parks, particularly in the National Parks of Sierra Nevada de Santa Marta, Sierra de la Macarena, and Catatumbo-Barí. (19) Dirección Nacional de Estupefacientes, DNE, Table of state of claims submitted from October 2003 and February 5, 2005, updated May 2005. See <http://www.cultivosilicitoscolombia.gov.co/documentos/quejas080205.xls>; Confidential communication with Colombian government official. June 2005. (20); Confidential communication with Colombian government official. June 2005. (21) U.S. Environmental Protection Agency, Office of Pesticide Programs, "Details of the 2003 Consultation for the Department of State, Use of Pesticide for Coca and Poppy Eradication Program in Colombia," June 2003, p. 34.