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Honorable Members of Congress:

Under conditions established in Title II of the Foreign Operations, Export Financing, and Related Programs Appropriation Act 2002, the U.S.-sponsored crop eradication programs currently under way in Colombia must satisfy several conditions. Funds appropriated by this Act for purchase of crop eradication chemicals may only be released if the State Department, in consultation with EPA and USDA, determines and reports to Congress that the crop eradication campaigns are "carried out in accordance with regulatory controls required by the Environmental Protection Agency as labeled for use in the United States." The State Department must also determine and report to Congress, again after outside consultation, 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." In this letter, we comment on the materials that the State Department presented to Congress on September 4, 2002 in reference to these conditions, including the assessment provided by US EPA.

In our opinion, the State Department has failed to demonstrate that the aerial coca fumigation is being carried out in accordance with US EPA regulatory controls that would apply in the unlikely event that an aerial crop eradication campaign were carried out within the US. Furthermore, the State Department has failed to determine the absence of unreasonable risks to or adverse effects on human health or the environment associated with the chemicals used in the crop eradication campaigns, in the manner in which these chemicals are applied. On the contrary, the information presented by EPA underscores the human health hazards associated with the spray campaigns and the multitude of uncertainties associated with the aerial spraying of a broad-spectrum herbicide in a tropical ecosystem.

In section I of this letter, we highlight some significant concerns that EPA raises regarding environmental and human health hazards of the crop eradication program, including lack of data to assess these hazards properly. These concerns are sufficient in themselves to cast doubt on the program. In sections II and III, we review EPA's assessment of the program's consistency with US regulatory standards and of the magnitude of risks to or adverse effects on human health or the environment. We highlight the gaps that exist in EPA's analysis of the spray campaigns due to incorrect assumptions, incomplete information, and failure to consider important issues. Finally, in section IV, we comment on the State Department's report to Congress and response to EPA's analysis. As we discuss, documents submitted to Congress by the State Department alongside the EPA report gloss over, downplay, or simply ignore many of the concerns and uncertainties emphasized by EPA. The result is a presentation that seems designed to mislead readers and—through exaggerations and incomplete summaries—to obscure the manifold problems associated with the eradication program.

## I. Problems identified by EPA

In our opinion, the doubts raised within EPA's report—even given the weaknesses of that report, which we discuss in detail below—are in themselves sufficient to cast serious doubt on the coca eradication program. It is important to note that *EPA's report never states that in the opinion of the Agency, the crop eradication campaigns meet the standards established by Congress.*

EPA's findings fail to demonstrate that the chemicals used in the coca spraying, in the manner in which they are applied, do not pose unreasonable risks or adverse effects on humans or the environment. On the contrary, EPA clearly identifies risks to both human health and the environment posed by the eradication program. In addition, the Agency describes clearly the limitations it faced in its analysis, due to lack of complete information and adequate data. Throughout the report, EPA notes that it lacks information or experience to assess certain hazards. EPA comments repeatedly that data provided by the Department of State are either incomplete or irrelevant to the coca eradication program.

This inability to review risks and adverse effects properly cannot be read as a finding of no "unreasonable risk" or "adverse effect." Simply stated, *the absence of relevant data does not translate into the absence of risks or adverse effects.* Rather, this lack of data indicates that the conditions set out by Congress have not been met. The data gaps make it impossible to certify, as required by Congress, that the chemicals being used "...in the manner they are being applied, do not pose unreasonable risks or adverse effects to humans or the environment." Particularly striking data gaps include the following.

- **EPA was provided with no valid or relevant epidemiological data.** EPA notes that the report on health data from the Department of Nariño presents "incomplete medical records" and suggests that in order to obtain useful epidemiological data, prospective studies would be helpful.<sup>1</sup> Furthermore, the limited incident data from Colombia made available to EPA by the State Department are associated with the opium poppy eradication program, not the coca eradication program. EPA comments that since herbicide use and exposure associated with poppy eradication may be different for use and exposure associated with coca eradication, "conclusions should be made cautiously."<sup>2</sup> This is an understatement, since according to figures from the National Anti-Narcotics Police of Colombia, both the concentration of the herbicide formulation and the quantities applied to eradicate coca are several times higher than those used to eradicate poppy.<sup>3</sup>

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<sup>1</sup> Section 2 (Human Health): IX (Incident Data Review): 2.5 (Review of records of patients treated at Aponte Health Center). Unless otherwise noted, references refer to US EPA's "Consultation Review of the Use of Pesticide for Coca Eradication in Colombia," released by the Bureau for International Narcotics and Law Enforcement Affairs, September, 2002, viewed at <http://www.state.gov/g/inl/rls/rpt/aeicc/13237.htm>. Other documents released by the U.S. Department of State in September, 2002, and cited in this letter were viewed at <http://www.state.gov/g/inl/rls/rpt/aeicc/>.

<sup>2</sup> Executive Summary: Findings

<sup>3</sup> Anna Cederstav, Ph.D, "'Validity of the reports presented by the US Department of State as evidence that no human health impacts are caused by the 'Plan Colombia' aerial herbicide spraying in coca-producing regions." Available at: [http://www.usfumigation.org/Literature/PressReleases/MEMO-STATE\\_DEPARTMENT\\_EVIDENCE-EJ-.rtf](http://www.usfumigation.org/Literature/PressReleases/MEMO-STATE_DEPARTMENT_EVIDENCE-EJ-.rtf)

- **EPA lacks information on or experience with the tank mixture.** EPA states that it “cannot evaluate any potential acute toxicity effects resulting from direct contact with the tank mixture” due to lack of data.<sup>4</sup> Studies requested from the State Department were not provided in time for EPA to evaluate them. EPA also “does not have ecological toxicity information on adjuvant Cosmo-Flux 411F” and notes that, although “the individual ingredients (surfactants) which comprise the adjuvant are substances with low oral and dermal mammalian toxicity[, t]he toxicity of the blend of these surfactants is not known.”<sup>5</sup>
- **EPA possesses little to no data on or experience with the affected ecosystems.** EPA notes that there are “important uncertainties” regarding effects on wildlife given that “[t]he Agency uses the test species as surrogates for other North American species not tested, but has little experience with tropical flora and fauna. Similarly, laboratory and field estimates of the environmental fate of pesticides, including potential surface-water contamination, are performed with North American soils, hydrology and climate data.”<sup>6</sup>
- **In spite of the limited information available, EPA explicitly identifies some clear environmental and health risks.** Most significantly, the Agency highlights the probability of spray drift and likely damage to non-target plants. The Agency notes also that that under these conditions, “adverse effects from the temporary loss of habitat in the spray area could occur”<sup>7</sup> Also, despite some important omissions in its review of human health concerns, EPA raises concerns about the acute eye toxicity of the formulated product currently in use.

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<sup>4</sup> Section 2 (Human Health): X (Risk Characterization)

<sup>5</sup> Section 4 (Ecological Risk Assessment): VI (Risk Characterization)

<sup>6</sup> Section 4 (Ecological Risk Assessment): VI (Risk Characterization)

<sup>7</sup> Executive Summary: Findings

## II. Consistency with Regulatory Controls that Would Apply in the US

Our review of EPA's report suggests that the State Department has not met the first condition in the 2002 foreign operations act, determining that crop eradication campaigns meet US regulatory standards, for reasons including the following.

- **Inappropriate comparison to forestry applications:** Based on information provided by the State Department, EPA chose US uses of glyphosate herbicides in forestry and rights-of-way as its point of reference in evaluating the crop eradication campaigns. In Colombia, however, glyphosate herbicides are applied aerially to cultivated land. Testing the protocols of the crop eradication campaigns against US regulatory standards for forestry and rights of way is inappropriate as a means to evaluate protocols used in cultivated or inhabited areas. Using this unsuitable point of reference, the EPA "found application rates described as used in Colombia to be within the parameters listed on U.S. labels." However, as EPA notes, the product being used in Colombia is not registered for agricultural use. To our knowledge, labels for similar products which are registered for use in agriculture rarely, if ever, allow the high concentrations used in the coca eradication campaigns.<sup>8</sup>
- **Use of fixed wing aircraft:** EPA notes that the herbicide application procedures in Colombia are very different from procedures used in the US. According to EPA, in the US, glyphosate herbicides are rarely or never applied by fixed-wing aircraft. In cases where glyphosate herbicides are applied aerially in the US, they are applied using helicopters, which fly more slowly than fixed-wing aircraft and thus allow more control of drift. (Even when applied by helicopter, glyphosate herbicides applied aerially can pose significant threats of harm to non-target vegetation through drift.<sup>9</sup>)
- **Lack of oversight or enforcement mechanisms:** As EPA emphasizes throughout its report, regulatory controls in the US include both label rules and enforcement mechanisms. EPA notes that in the US, "the Agency can assure significant controls ... through the pesticide label, and through a state infrastructure which governs label compliance to address issues such as drift and worker and bystander exposure."<sup>10</sup> In other words, EPA cannot evaluate the spray program in Colombia simply by verifying whether the formulation in question is used in the US; EPA also has to look at the conditions under which the formulation is applied and the likelihood that safety guidelines will be adhered to. EPA and DoS comment at several points on the difficulties presented by the conditions under which the spraying is carried out. For example, DoS says: "Spray planes are under continual risk from hostile ground fire, yet the pilots spray *as low over the coca fields as obstacles (e.g. trees) and security conditions will permit* [emphasis added]."<sup>11</sup> This statement makes it clear that the assurances of correct spraying procedure that would generally apply in the US are not guaranteed in Colombia, and are unlikely to be adhered to.

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<sup>8</sup> See for example, Roundup Ultra sample label (current as of January 13, 1999), downloaded from <http://www.cdms.net/ldat/ld178005.pdf> on November 7, 2001.

<sup>9</sup> On drift hazards from glyphosate herbicides, see, for example, D. Atkinson, "Glyphosate damage symptoms and the effects of drift," in E. Grossbard and D. Atkinson, ed., *The Herbicide Glyphosate* (London: Butterworth Heinemann, 1985), 455-458 or Nicholas J. Payne, "Off-Target Glyphosate from Aerial Silvicultural Applications, and Buffer Zones Required around Sensitive Areas," *Pesticide Science* 34 (1992) 1-8.

<sup>10</sup> Executive Summary: Findings

<sup>11</sup> U.S. Department of State, "Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia and Conditions of Application": Section on "Spray Parameters."

### **III. Unreasonable risk to or adverse effects on human health or the environment**

Our review of EPA's report suggests that the State Department has not demonstrated the absence of unreasonable risk to or adverse effects on human health or the environment. In fact, EPA's assessment emphasizes that there are human health risks from the formulation currently being used, that non-target plants are likely to be affected, and that the Agency had insufficient information to even begin to assess additional environmental effects.

#### **A. Human Health Hazards**

##### *Lack of epidemiological data*

As EPA acknowledges, the State Department has not provided the Agency with any valid epidemiological data on which to base an assessment of past or present health effects of the spray campaign. The only epidemiological data from Colombia that appear to have been provided to the Agency come from a single report, commissioned by the U.S. Embassy in Bogotá, on medical records from the Department of Nariño. This report, while lengthy, contains no useful information.

EPA lacks information on the similarities or differences between the coca and poppy eradication campaigns. In particular, EPA notes that the herbicide application rate for poppy is reported to be "lower than that for coca," although EPA does not appear to have detailed information on the application rate. EPA also notes that "the Agency has no 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 Agency 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." <sup>12</sup> In other words, the epidemiological data provided to EPA as the basis for evaluating the coca eradication program do not refer to that program, and thus are irrelevant.

In addition to being drawn from poppy rather than coca eradication, the Colombian health data provided by the State Department are simply uninformative. EPA notes that no meaningful quantitative conclusions can be drawn from the US Embassy-sponsored report on health effects in the Department of Nariño. This report, on which we have commented in the past<sup>13</sup>, is essentially a haphazard collection of inconclusive data. Among other problems, the Nariño report compares real data from 1999 to *estimated* data for 2000, and concludes from this comparison that there was no significant increase in reported problems in the year in which spraying occurred. The report also examines just 29 case reports, with no explanation of how these case reports were selected. This small number of case reports is odd given that the health center from which they are drawn is one of just three health centers serving a population of 17,000; morbidity numbers reported for the region are in the hundreds.

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<sup>12</sup> Section 2 (Human Health): IX (Incident Data Review)

<sup>13</sup> See Rachel Massey, "Critique of the 'Nariño Health Report,'" March 7, 2002. Available at: [http://www.usfumigation.org/narino\\_pdf.pdf](http://www.usfumigation.org/narino_pdf.pdf).

EPA comments that "[g]iven the limited amount of documentation, none of the data in the report from Colombia provide a compelling case that glyphosate spraying has been a significant cause of illness in the region studied."<sup>14</sup> By the same token, these data provide no support for the view that the spraying is safe.

In sum, the State Department has failed to provide EPA with data on which to base an evaluation of health effects of the coca eradication campaigns. Obviously, the absence of good data is not equivalent to an absence of adverse health effects. Thus, EPA is not in a position to fulfill its responsibility of evaluating the magnitude of human health risks posed by the coca eradication campaigns.

#### *Lack of information on adjuvant*

EPA states that it is unable to "fully assess" the tank mix used in Colombia because the adjuvant, Cosmo-Flux 411F, is not used in the U.S.<sup>15</sup>

#### *Incomplete assessment of exposure routes*

In evaluating hazards to human health, EPA looks only at a small selection of the relevant exposure routes. EPA's decisions about which routes to consider are based on several unjustified assumptions.

For example, EPA chose not to conduct an acute dietary risk assessment. EPA suggests that dietary exposure to the herbicide through residues on crops will be insignificant, in part because most food crops that come into contact with the herbicide will die and thus will not be consumed.<sup>16</sup> This may not be an accurate assumption, since individuals may be obliged to eat sprayed food crops if they do not have resources to purchase additional food. It is important to recognize that populations in the affected area may be under- or malnourished, especially since poor nutritional status can increase susceptibility to toxic chemicals in some instances. Under- or malnourished communities are unlikely to respond to the spraying of their food crops by leaving the crops in the fields to die; they are more likely to harvest what is salvageable immediately after spraying.

In addition, since nutritional status of the affected populations may be directly affected by the destruction of food crops, nutritional status should be taken into account in assessing likely human health effects of contact with the spray mixture.

EPA also fails to assess dermal, inhalation, or incidental oral exposure to the spray, based on the assumption that individuals will not be sprayed directly. EPA cites a State Department statement that "pilots are instructed not to spray fields where people are present."<sup>17</sup> EPA does acknowledge that "[d]ue to spray drift, there is potential exposure for persons in areas near those targeted for spraying." However, noting that "it is likely that drift is minimized in this program if

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<sup>14</sup> Section 3 (Review of Glyphosate Incident Reports): V (Conclusions)

<sup>15</sup> Section 3 (Review of Glyphosate Incident Reports): Background

<sup>16</sup> Section 2 (Human Health): VII (Exposure Assessment): "Dietary Food Exposure"

<sup>17</sup> Section 2 (Human Health): VII (Exposure Assessment): "Post-application Exposure" and "Incidental Oral Exposure (Hand to Mouth)"

all procedures are adhered to and equipment is in working order," EPA does not assess risks from dermal, inhalation, or incidental oral exposures in this case either.<sup>18</sup>

Unfortunately, there are reasons to believe that people have been and will continue to be sprayed in the course of the crop eradication campaigns. In one striking example, a US Senator was sprayed accidentally during a demonstration of herbicide application technique.<sup>19</sup> The extent of spray drift, discussed in greater detail below, and the proximity of coca fields to human habitation and work places combine to make it easy for similar accidents to happen frequently.

Furthermore, the State Department itself refers to the possibility that individuals may be sprayed. In its memo on "Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia", INL refers to "humans who may be present under the swath of the plane."<sup>20</sup> In other words, while EPA accepts INL's claim that people on the ground will not come into direct contact with the spray, INL itself appears to admit this possibility.

#### *Acute toxicity of formulation currently in use*

According to EPA, the herbicide currently in use in Colombia poses threats of severe skin irritation and irreversible eye damage.<sup>21</sup> EPA notes that these characteristics "would be expected for many surfactants." Due to concern about this toxicity to the eyes as well as "the lack of acute toxicity data on the tank mixture," EPA "recommends that DoS consider using an alternative glyphosate product (with lower potential for acute toxicity) in future coca and/or poppy aerial eradication programs."<sup>22</sup> It is worth noting that the problem of lack of data on the tank mixture, which includes an adjuvant, will not be solved by switching to a different Roundup product.

#### *Lack of data on the tank mixture*

EPA notes that "the DoS agreed to supply the Agency with a full battery of the six acute toxicity tests on the tank mix. To date, the Pesticide Program has not received this data. Until such information is supplied to the Agency, EPA cannot evaluate any potential acute toxicity effects resulting from direct contact with the tank mixture."<sup>23</sup> EPA makes this point in its discussion of mixers and loaders who may be exposed to the undiluted product, but this information is equally important for evaluating hazards to other individuals who may be exposed.

## **B. Environmental Hazards**

EPA acknowledges that it has very little experience in evaluating ecological effects of pesticides in tropical systems. Among other areas, EPA lacks data on the susceptibility of endemic species to pesticide exposure, and has no information on the ability of affected plants to regenerate after

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<sup>18</sup> Section 2 (Human Health): VIII (Spray Drift)

<sup>19</sup> Rob Hotakainen, "Colombian Police Spray Herbicide on Coca, Wellstone," *Minneapolis Star Tribune* (December 1, 2000)

<sup>20</sup> Document #2 (Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia): "Spraying and Human and Environmental Health"

<sup>21</sup> Section 2 (Human Health): II (Executive Summary) : "Exposure"

<sup>22</sup> Section 2 (Human Health): X (Risk Characterization)

<sup>23</sup> Section 2 (Human Health): X (Risk Characterization)

spraying. Despite these important gaps in information available to the Agency, EPA is able to state that habitat loss is expected. In our opinion, EPA underemphasizes the potential importance of this habitat loss. Habitat loss that EPA refers to as "temporary" could be sufficiently long-lasting to have a permanent effect on populations of endemic and endangered species.

#### *Hazards of drift: damage to non-target plants and habitat loss*

EPA affirms that damage to non-target plants is likely.<sup>24</sup> EPA notes that according to studies on North American crops, "25% of exposed plants can be damaged by exposure to glyphosate applied at rates as low as 0.07 lb ai/A." The application rate used for coca eradication is 3.34 lb ai/A. Based on this application rate, modeling of spray drift suggests that "50% of young crop plants would be expected to show measurable reductions in dry weight from 150 to nearly 600 feet downwind (depending on spray and wind conditions). Some affected plants would likely recover while more sensitive plants may die, have reduced reproductive success, or reduced yields (crop plants)."<sup>25</sup>

EPA states that the "proposed use of glyphosate itself does not appear to pose a significant direct risk to terrestrial or aquatic animals, *although secondary adverse effects from the temporary loss of habitat in the spray area could occur.*" EPA adds that the Agency "would not expect any risk to birds and mammals, including livestock, based on *dietary exposure to the active ingredient glyphosate.*"<sup>26</sup> [emphasis added] In this statement, EPA acknowledges that damage to non-target plants may disrupt habitats. EPA does not explore this possibility, or its implications, beyond this brief allusion. However, by disrupting habitat, the coca eradication program has the capacity to affect populations of endemic species, which will not necessarily be able to survive the disruption, even if it is "temporary." Given the magnitude of the spray programs, the potential loss of habitat—and associated wildlife—is clearly significant.

Moreover, habitat loss will not necessarily be temporary. Tropical ecosystems may lack the regenerative capacity of many temperate ecosystems. Many tropical ecosystems are characterized not only by high biodiversity but also by nutrient-poor soils, where some plant species cannot germinate without the presence of specific soil microorganisms and/or specific additional plant species. For this reason among others, reseeding in a tropical ecosystem can be a more complicated and uncertain process than in temperate climates. Many species may be represented only by a small number of individuals in a large area; in some cases, the loss of a few individuals may have significant impacts on the forest community. (It is worth noting that in this context, it is possible that hardy coca plants will regenerate more quickly and reliably than many other plants damaged by the spray.)

#### *Lack of data on tropical ecosystems*

EPA notes that insufficient data exist on the effects of glyphosate herbicides in tropical environments. "The toxicity of a pesticide to different classes of animals and plants can vary widely among species within an individual ecosystem. The Agency uses the test species as

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<sup>24</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Glyphosate": "Terrestrial"

<sup>25</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Glyphosate": "Terrestrial"

<sup>26</sup> Executive Summary: Findings



surrogates for other North American species not tested, but has little experience with tropical flora and fauna. Similarly, laboratory and field estimates of the environmental fate of pesticides, including potential surface- water contamination, are performed with North American soils, hydrology and climate data."<sup>27</sup>

EPA cites a literature review conducted by Jeremy Bigwood for the government of Ecuador. Information presented in this review suggests that glyphosate herbicides can have adverse effects on soil ecology, including effects on nitrogen-fixing bacteria and on mycorrhizal relationships, which are crucial for germination of some species.<sup>28</sup> Although consideration of effects on microbiota is not standard for EPA analyses, some analysis of effects on soil microorganisms may be crucial for accurately assessing effects on tropical ecosystems, due to the importance of soil microorganisms for regeneration of some natural flora.

### *Aquatic effects*

With regard to aquatic toxicity, EPA's report does not consider the specific conditions and characteristics of the ecosystem where the eradication program is taking place and thus cannot guarantee, and does not claim to guarantee, an absence of adverse effects on aquatic fauna.

The agency states that the active ingredient, glyphosate, is "slightly toxic to fish, invertebrates, and aquatic plants." Although there appears to be significant variation in susceptibility of fish to the herbicide<sup>29</sup> EPA does not review any data on fish native to Colombia.

EPA calculates exposures expected from direct application of herbicide at a concentration of 3.75 lb acid eq/acre to a 1-acre, 6 foot deep pond and finds that resulting exposures would be in the parts per billion range, "well below the glyphosate toxicity values measured for aquatic organisms in the laboratory."<sup>30</sup> EPA notes that "much greater exposure could occur from direct overspray of much smaller water bodies." EPA says that simulation of effects on smaller water bodies is not standard procedure in EPA risk assessments, but notes that that "some ecologically important water bodies too small to appear on maps could be sprayed directly in a project as large as the coca eradication program."<sup>31</sup> Given that application conditions in Colombia differ significantly from those in the US, and that portions of the targeted terrain are rainforests characterized by multiple small bodies of water and wetlands, plus the fact that press and local authorities' reports refer specifically to fish kills,<sup>32</sup> ecological hazards to organisms in small water bodies clearly cannot be overlooked as an ecological hazard.

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<sup>27</sup> Section 4 (Ecological Risk Assessment): VI (Risk Characterization)

<sup>28</sup> Jeremy Bigwood, Technical Advisor, "A Brief Overview of the Scientific Literature Regarding Reported Deleterious Effects of Glyphosate Formulations on Aquatic and Soil Biota." Prepared for the Ministerio del Ambiente of Ecuador, March 6, 2002. Available at <http://usfumigation.org/Literature/Scientific%20Papers/ReviewRoundup.pdf>, visited September 17, 2002.

<sup>29</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment)

<sup>30</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Glyphosate": "Aquatic"

<sup>31</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Glyphosate": "Aquatic"

<sup>32</sup> Media reporting on fish kills associated with poppy and coca eradication includes articles from over two years ago, such as Larry Rohter, "To Colombians, Drug War is Toxic Enemy," *New York Times* May 1, 2000, as well as very recent articles, such as "Fumigaciones afectan cultivos del Catatumbo," *El Tiempo* June 25, 2002. Reports from municipal authorities include Inspección de Policía Municipal, Municipio Valle del Guamuez, Departamento del

### *Endangered species*

EPA entirely lacks information on endangered species in the affected area. For example, EPA presents data on dietary exposure for two birds: bobwhite quail and mallard ducks.<sup>33</sup> EPA does not appear to possess even a list of endangered birds and other species in the affected area, much less any specific information on these species' susceptibility to dietary or other exposures to the herbicide product. In the US, an evaluation of risk to endangered species would be an essential part of the review process and, as EPA notes, this could lead to the agency setting much more restrictive limits on spraying.<sup>34</sup> In the review of the coca eradication program in Colombia, no such evaluation has been attempted by EPA.

### *Lack of data on effects of the tank mix*

Due to lack of data, EPA is unable to assess the ecological toxicity of the tank mix used in Colombia. EPA notes that formulated glyphosate products can have greater ecological toxicity than the active ingredient alone,<sup>35</sup> yet EPA states that it possesses *no* ecological toxicity information on the adjuvant, Cosmo-Flux 411F.<sup>36</sup>

EPA states that "[t]he potentially most important uncertainty in this risk assessment concerns differences in the formulation and tank mix for use in Colombia from those used in the United States. Toxicity studies indicate that US 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...." EPA states further that "[t]he risk to non-target terrestrial and aquatic animals from formulated glyphosate used for coca eradication is uncertain because the Agency does not have relevant toxicity data for the Colombian formulation, nor for the adjuvant Cosmo-Flux 411F."<sup>37</sup>

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Putumayo, "Consolidado General de Pérdidas por la Fumigación hasta el día 21 de febrero de 2001," which lists numbers of animals, including fish, killed in each of sixty communities.

<sup>33</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Glyphosate": "Terrestrial"

<sup>34</sup> Section 4 (Ecological Risk Assessment): VI. Risk Characterization

<sup>35</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Risk Specific to Formulations of Glyphosate"

<sup>36</sup> Section 4 (Ecological Risk Assessment): VI (Risk Characterization)

<sup>37</sup> Section 4 (Ecological Risk Assessment): III (Ecological Risk Assessment): "Risk Specific to Formulations of Glyphosate."

#### IV. INL's Presentation of EPA's Findings

Documents submitted to Congress by the State Department alongside the EPA report gloss over, downplay, or simply ignore many of the concerns and uncertainties emphasized by EPA. The State Department addresses other EPA concerns by presenting misleading and sometimes meaningless information. Examples include the following.

- INL's document on "Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia and Conditions of Application" states that although the product label warns of a number of risks associated with exposure to the herbicide, "INL does not believe that the spray program exposes humans who may be present in a sprayed field to such risks" and "[t]he symptoms of such exposure are likely to be short-term and reversible."<sup>38</sup> EPA's assessment, however, draws no such conclusion. Rather, as we have noted above, EPA did not assess these risks, stating that "[s]ince DoS states that pilots are instructed not to spray fields where people are present, incidental oral exposure (hand-to-mouth) resulting from being directly sprayed by glyphosate was not assessed." Thus, two points are worth noting about INL's statement. First, INL appears to acknowledge that direct spraying of humans is possible, although it stated to EPA that this would not occur. Second, despite having received a lengthy assessment from EPA, in this statement INL simply disregards EPA's listing of concerns and uncertainties, and draws its own, undocumented and unsupported, conclusion.
- INL implies that the human health hazards associated with spray exposure are minimized by dilution of the formulated product in water. In response to EPA's warning of acute eye toxicity of the herbicide formulation, INL states that "[t]he concentrated glyphosate formulation is diluted when mixed with water for use in the spray program; approximately 75 percent of the end use product is water."<sup>39</sup> INL repeats this argument in another context, suggesting that health hazards described on the product label do not apply to the aerial eradication program;<sup>40</sup> essentially, INL argues that toxicity data are irrelevant because the herbicide is diluted. However, much of the water content highlighted by INL is actually part of the formulated product and does not represent a dilution or a reduction of toxicity. Furthermore, it is standard procedure to dilute herbicides before application; and it is, obviously, not standard procedure to ignore existing toxicity data. The EPA and the manufacturer certainly took dilution rates into account in drawing their conclusions about health hazards from this product. Therefore, these statements by INL about dilution seem designed to mislead.
- EPA estimates that, due to drift, the spray program may damage non-target crop plants up to 600 feet downwind of the sprayed area. INL argues that observations in the field do not bear

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<sup>38</sup> "Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia and Conditions of Application" (section: "Spraying and Human and Environmental Health")

<sup>39</sup> "Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Memorandum of Justification Concerning Determination on Health, Environmental, and Legal Aspects of Coca Eradication in Colombia," point 3.

<sup>40</sup> "Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia and Conditions of Application" (section: "Spraying and Human and Environmental Health")

this out, suggesting that EPA's warning can be ignored or discounted.<sup>41</sup> While providing no specific data to support its assertion, INL emphasizes that (unlike EPA) the "experts" it relies on "actually go to the field." Congress should note that EPA's conclusion is based on a standard and accepted models, drawing both on US experience and on data provided by the State Department. It is disingenuous for INL to discount this conclusion as unreliable due to lack of field verification, since the entire EPA report involves assessments based on US experience and data provided by DoS, with no independent field analysis. This approach to assessing the program is problematic, as we have discussed at length in this document. However, it is inappropriate for INL to discount selectively the conclusions unfavorable to its program, based on a lack of field data which characterizes the entire exercise. Finally, whereas INL claims (with no documentation) that "evidence of spray drift is rare" numerous reliable observers including the Colombian Human Rights Ombudsman, UN representatives, and major press sources have concluded otherwise.<sup>42</sup>

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<sup>41</sup> "Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Department of State's Comments on EPA August 19, 2002 Letter"

<sup>42</sup> According to the UN Drug Control Programme's representative in Colombia and Ecuador, Klaus Nyholm, "We know that despite the government's policy, sometimes small farmers' plots are hit as well, and that legal crops such as bananas and beans are being fumigated by mistake." (Cesar García, "U.N. Calls for Drug Crop Monitors," Associated Press, July 24, 2001). Within the Colombian government itself, the Human Rights Ombudsman reported in February 2001 that the aerial spraying had destroyed crops in eleven government-sponsored crop substitution and alternative development programs, programs specifically intended to provide poor farmers with economic alternatives to drug crop production. (Eduardo Cifuentes Muñoz, Human Rights Ombudsman, "Sobre el impacto de fumigaciones en 11 proyectos de desarrollo alternativo en el Putumayo," Resolución Defensorial No. 004, February 12, 2001.) Similar observations have been made and documented by the international press including the New York Times, the BBC and others ("Guerra contra los cocaes," BBC World Service, January 18, 2001, available at <http://www.bbc.co.uk/spanish/news010117colombia.shtml>, site visited November 15, 2001; Juan Forero, "No Crops Spared in Colombia's Coca War," *New York Times*, January 31, 2001; "Habían Erradicado Mas De La Mitad De La Coca De Sus Predios" *El Tiempo*, September 7, 2002.)