INTERNATIONAL COURT OF JUSTICE

CASE CONCERNING
AERIAL HERBICIDE SPRAYING

ECUADOR
v.
COLOMBIA

REPLY OF ECUADOR

VOLUME I

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31 JANUARY 2011

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CHAPTER 1.

INTRODUCTION

1.1 The Applicant instituted these proceedings before the International Court of Justice ("the Court") on 31 March 2008. In accordance with an *Order* of the Court, the Applicant filed its *Memorial* on 28 April 2009, and the Respondent filed its *Counter-Memorial* on 29 March 2010. By *Order* dated 25 June 2010, the Court authorized the submission of a *Reply* by the Applicant and a *Rejoinder* by the Respondent, and fixed 31 January 2011 as the time limit for the filing of the *Reply*. This *Reply* is submitted in accordance with that *Order*, together with accompanying Annexes.

1.2 This *Reply* supplements the submissions and arguments on law and evidence put forward in the *Memorial*, all of which are maintained in full. As provided by Article 49(3) of the Rules of the Court, Ecuador's *Reply* addresses the issues that continue to divide the Parties.

1.3 In its *Counter-Memorial*, Colombia has asked the Court to "adjudge and declare that the claims of Ecuador, as set out in the *Memorial* of 28 April 2009, are rejected"[1]. In support of that submission, Colombia has given a selective and misleading presentation of the facts and the law. As described in more detail in this *Reply*, the facts are materially different than those on which Colombia purports to rely, and the *Counter-Memorial* is especially noteworthy for its failure to put forward evidence that must be within Colombia's possession but that it has

[1] Counter-Memorial of Colombia, Vol. I, Submissions (29 Mar. 2010) (hereinafter "CCM").

chosen not to tender. Ecuador notes the economy with which Colombia treats facts that are within its knowledge, in particular the quality and composition of the herbicidal spray and the manner of its delivery. Two points stand out and bear careful focus by the Court: (1) the herbicidal mixture that is aerially sprayed along the border with Ecuador is significantly more toxic than Colombia admits; and (2) the conduct of the spraying has resulted in tens of thousands of occasions on which Colombia has acted in a reckless manner in blatant disregard of its own legal and administrative requirements for preventing spray drift into Ecuador. In particular, Colombia has allowed the spraying to take place using inappropriate aircraft that fly at excessive speeds and heights, and that make use of application rates at times and under meteorological conditions that allow a much higher occurrence of spray drift across the border. Ecuador invites the Court to draw all appropriate inferences from Colombia's failure to invoke certain evidence.

1.4 As regards the law, it is plain that certain matters are not disputed by the Parties. In particular, there is no dispute between the Parties that when Colombia began spraying along the border with Ecuador in January 2000 it had not carried out any sort of prior environmental impact assessment, at the local or national levels or in respect of transboundary impacts. It is also clear that Colombia had not carried out any kind of assessment on the effects of the spraying on indigenous peoples, as required by its own domestic law and ILO Convention No. 169. Ten years into the spraying, it has still not carried out any sort of

environmental impact assessment, and the only actions it has taken are in the form of an "Environmental Management Plan", which is intended to manage the environmental effects, not predict them. Moreover, the evidence before the Court readily establishes that in carrying out its aerial spraying operations close to the border, Colombia has not followed the guidelines for controlling spray drift as set forth in its "Environmental Management Plan", and that it has routinely allowed spraying to occur in a manner that disregards the legally binding instructions contained on the applicable product labels. This has resulted in an increased risk of harm to the people and natural environment of Ecuador, and also actual harm as set forth in the evidence.

1.5 The Parties are also not in dispute as to the rules of international law that bind the Parties, although they disagree as to their application to the facts. They agree that distinct legal obligations exist in relation to: the obligation to respect Ecuador's territorial sovereignty; the protection of the environment; respect for fundamental human rights; and the protection of indigenous peoples on both sides of the border. Each of these obligations exists independently and gives rise to its own cause of action, though Colombia adopts a curiously minimalist approach to the scope of those obligations.

1.6 These are important points of difference that separate Ecuador and Colombia, but there is also much on which the Parties agree. The Parties agree, for example, on the following matters:

(1) that the spray mixture is toxic and causes harm to people, animals and plants, although they disagree as to the extent of the harm[2];

(2) that the composition of the spray mixture utilized by Colombia has changed over time[3];

(3) that Colombia has an obligation of due diligence to prevent or mitigate transboundary harm[4];

(4) that Colombia did not carry out any environmental impact assessment before authorizing the aerial spraying[5];

(5) that drift is inherent and unavoidable in aerial spraying[6];

(6) that Colombia's conclusions about the extent of drift are premised upon the assumption that Colombia follows strict operational parameters[7].

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[2] *See, e.g.*, Memorial of Ecuador, Vol. I, Chap. 5, paras. 5.4-5.72 (28 Apr. 2009) (hereinafter "EM"); CCM, Chap. 4, para. 4.43; Toxicological Opinion Nº 0685, regarding the toxicological classification of the mix Glyphosate + POEA + Cosmo-Flux (1%), Colombian Health Ministry, 8 Oct. 2001. CCM, Vol. II, Annex 44; CCM, Chap. 4, para. 4.52.

[3] *See, e.g.*, EM, Chap. 5, paras. 5.33-5.34; United States Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Updated Report on Chemicals Used in the Aerial Eradication Program* (Dec. 2003). EM, Vol. III, Annex 148; CCM, Chap. 4, para. 4.50.

[4] *See, e.g.*, EM, Chap. 8, paras. 8.10-8.37; CCM, Chaps. 1 and 8, paras. 1.40, 8.23, 8.50-8.52, 8.59.

[5] *See, e.g.*, EM, Chaps. 3, 5 and 8, paras. 3.7, 3.28-3.42, 5.25-5.26, 5.71-5.72, 8.41-8.42; CCM, Chap. 6, paras. 6.23-6.24, 6.26.

[6] *See, e.g.*, EM, Chap. 5, paras. 5.74-5.83, 5.84-5.90; CCM, Chaps. 4 and 7, paras. 4.67-4.68, 7.17-7.29, 7.170.

(7) that Ecuador's border region is poor and isolated, with limited sanitation and health and other public services[8];

(8) that Ecuador's border region is rich in biodiversity and natural resources[9];

(9) that vulnerable areas, including human settlements, indigenous and environmental reserves, and bodies of water require heightened precautionary measures[10];

(10) that a buffer zone is required[11]; and

(11) that Colombia has no right to overflight in Ecuador and that overflight is a breach Ecuador's territorial sovereignty[12].

They concur also about the factors that are likely to enhance the risk of harmful spray drift, including excessive flight speed, dispersion of the herbicides at too great an altitude, excessive spray application rate, and spraying at night time and

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[7] *See, e.g.*, EM, Chaps. 3 and 5, paras. 3.15, 5.91-5.99; CCM, Chaps. 4, 7 and 8, paras. 4.23-4.29, 4.57-4.70, 4.80, 7.17, 7.31-7.32, 7.171-7.173, 8.60.

[8] *See, e.g.*, EM, Chap. 2, paras. 2.17-2.18, 2.22-2.28; CCM, Chaps. 2 and 7, paras. 2.4, 2.13, 2.15-2.16, 2.20-2.23, 2.29-2.30, 2.32-2.35, 7.37, 7.183-7.184.

[9] *See, e.g.*, EM, Chap. 2, paras. 2.11-2.16; CCM, Chap. 3, paras. 3.20-3.23, 3.25.

[10] *See, e.g.*, EM, Chaps. 2, 6, 8 and 9, paras. 2.11, 2.16, 2.19, 2.22, 5.48, 5.80, 6.49, 8.17, 8.29-8.30, 9.70-9.74; CCM, Chaps. 4, 7 and 10, paras. 4.59, 7.5, 7.17, 7.32, 7.82, 7.89, 7.176, 7.187, 10.11.

[11] *See, e.g.*, EM, Chap. 3, paras. 3.14, 3.59, 3.74-3.80; CCM, Chaps. 4, 5, 7, 8 and 10, paras. 4.59, 4.63, 5.62-5.63, 5.67, 5.109, 7.5, 7.17, 7.32, 7.82, 7.89, 7.176, 7.187, 8.60(4), 10.9.

[12] *See, e.g.*, EM, Chap. 7, paras. 7.16-7.17; CCM, Chaps. 1, 5 and 8, paras. 1.41(4), 5.101, 8.42.

in adverse meteorological circumstances[13]. They also agree on the scientific model for predicting the extent of spray drift[14].

1.7 These significant points of agreement make the Court's task that much easier. Although the differences that remain are important, they are narrow and relate to matters of degree, not of principle. In Ecuador's view, the Parties' differences are easily resolved by reference to the evidence presented in the *Memorial* and in this *Reply*, as will be shown in the Chapters that follow.

Section I. Structure of the *Reply*

1.8 This *Reply* consists of eight Chapters, followed by Ecuador's Submissions, together with Annexes. **Chapter 2** begins Ecuador's substantive response to the *Counter-Memorial* by addressing certain issues of fact. It establishes that Colombia's description of the aerial spray programme is partial and incomplete and provides an inaccurate account of the activities that Colombia has authorized. The *Counter-Memorial* fails to provide a complete and accurate description of the spray ingredients, their chemical composition and their toxicity. It also fails to provide an accurate account of the manner in which the spraying has been carried out, and mis-states Colombia's compliance with its own mandatory operational parameters that were imposed to prevent spray drift.

[13] *See, e.g.*, EM, Chap. 5, paras. 5.84-5.99; CCM, Chap. 4, para. 4.68.

[14] *See infra* Chap. 2, paras. 2.189-2.190.

Moreover, and contrary to the description set forth in the *Counter-Memorial*, Colombia sprays in areas that it has itself stated should be off-limits to spraying in order to protect human settlements, indigenous peoples and ecologically sensitive areas. Colombia's failure to provide an accurate account of its spraying activities confirms its inability to take all necessary measures to prevent risk and harm.

1.9 The first part of Chapter 2 responds to Colombia's claims regarding the chemical composition and properties of the spray mixture. Whilst the parties agree that the herbicidal mixtures used by Colombia are incapable of discriminating between plants and destroy and seriously harm plant-life even in very small quantities[15], they disagree as to the impacts on human health and animals. The Parties are also in manifest disagreement as to the question of whether Colombia has fully disclosed the chemical composition of the herbicide spray: the evidence shows that it has not, and this is a matter of fact that may easily be established by the Court. The *Counter-Memorial* asserts that Colombia has sprayed only two herbicidal formulations: Roundup SL and, after 2004, GLY-41[16]. In fact, the evidence before the Court, including Colombia's diplomatic correspondence, demonstrates that Colombia has used two additional herbicidal formulations that are highly toxic, not least for their propensity to cause serious

[15] EM, Chaps. 5 and 8, paras. 5.7-5.11, 8.28; CCM, Chap. 7, para. 7.87.

[16] CCM, Chap. 4, para. 4.50.

and irreversible eye damage[17]. Moreover, the two formulations that Colombia admits to using are also hazardous: indeed, Colombia has had to discontinue the use of Roundup SL because of the dangers it poses to human eyes, and GLY-41's label expressly warns against allowing it to come into contact with human skin or to be inhaled or ingested[18]. Colombia does not disclose – in the *Counter-Memorial* or voluminous annexes – the chemical formula or complete list of ingredients for any of the various herbicidal mixtures it has sprayed along the border with Ecuador[19]. In short, the *Counter-Memorial* materially misrepresents the herbicidal mixtures in ways that seriously understate their ability to cause damage in Ecuador.

1.10 The misrepresentations do not end there. As shown in the second part of Chapter 2, they also, and especially, concern the manner in which the spray programme is conducted. The *Counter-Memorial* claims that Colombia complies strictly with all of the operational requirements that the Parties agree are necessary to prevent spray drift into Ecuador. Colombia seeks to assure the Court that Ecuador is protected against spray drift because the spray planes are equipped with sophisticated technology that automatically and instantaneously record – for each and every flight – all the relevant data, including the flight

[17] *See supra* Chap. 2, paras. 2.18-2.30.

[18] *See supra* Chap. 2, paras. 2.35, 2.38-2.40.

[19] *See supra* Chap. 2, paras. 2.48-2.50.

speed and altitude at the time of spray dispersion, the application rate and the time of day[20]. According to Colombia, these data have been subjected to regular reviews and audits, on at least a quarterly basis, and they confirm Colombia's strict compliance with every operational requirement designed to prevent spray drift[21]. Yet it is notable that Colombia has not provided the Court with any of this data or the audit reports on which its conclusions are said to rely. Nor does Colombia disclose any information about the precise locations or dates of its spraying activities, or the climatic conditions that pertained on each spraying occasion. In effect, Colombia asks the Court to take on faith its use of harmless substances and its strict compliance with all operational requirements designed to prevent them from drifting across the border into Ecuador.

1.11 Ecuador notes that the Court has developed a well-established practise in dealing with the evidence before it, rather than on bald assertions of fact. The *Reply* sets forth compelling new evidence that was not available to Ecuador when it submitted its *Memorial*. Ecuador has obtained and relies upon new evidence obtained through a Freedom of Information Act Request directed to the United States Department of State (which has funded and supported some of Colombia's aerial spraying operations): this includes detailed data that was generated automatically by Colombia's spray aircraft and recorded by the relevant data

[20] CCM, Chaps. 4 and 7, paras. 4.64 and 7.17.

[21] *Ibid.*, Chap. 4, paras. 4.28-4.29.

collection systems. This data provides incontrovertible evidence that undermines Colombia's factual assertions. Ecuador has put before the Court the totality of the detailed information that it has obtained on the records of more than 100,000 spray flights between 2000 and 2008. Each of these spraying activities occurred within 10 kilometres of Colombia's border with Ecuador, and it shows the actual locations, times, flight speeds and altitudes at the time of dispersion, and the spray application rates (in litres per hectare). This data is contained on a CD-ROM that accompanies the *Reply*, and it destroys Colombia's contention that its aerial spraying has been conducted in a manner designed to minimise risk and harm by avoiding the drift of the herbicidal mixtures onto the territory of Ecuador. The evidence before the Court proves that tens of thousands of spray flights violated the operational requirements imposed by Colombia and that the Parties agree are necessary to prevent spray drift. Specifically, Colombia's spray planes, within 10 kilometres of the border:

- on **75,841** occasions sprayed at a speed greater than the 165 miles per hour speed limit imposed by Colombia (as was claimed in the *Counter-Memorial* to have been strictly observed[22]);
- on **16,143** occasions sprayed while flying higher than the 50 metre height limit (as claimed in the *Counter-Memorial* to have been strictly observed[23]);

[22] CCM, Chap. 4, para. 4.62.

[23] *Ibid.*, Chap. 4, para. 4.62.

– on **27,139** occasions sprayed in excess of the application rate of 23.65 litres per hectare (as claimed in the *Counter-Memorial* to have been strictly observed[24]); and

– on **24,540** occasions sprayed in darkness and at night (a practise that the *Counter-Memorial* asserted was prohibited, because night time spraying is more conducive to long-distance spray drift[25]).

1.12 Colombia had access to all this data – and more – when it filed its *Counter-Memorial*, yet chose not to make it available to the Court. Newly available to Ecuador, having been obtained from the U.S. Department of State by means of a Freedom of Information Act request, the data make clear that Colombia's *Counter-Memorial* was inaccurate, and misleadingly so. It proves, *inter alia*, that:

(i) Colombia has used airplanes that are ill-suited to controlling spray drift to carry out its spraying operations;

(ii) the pilots – employees of a private U.S. company contracted to carry out the spraying operations – are poorly trained and undisciplined, and pay little heed to the operating requirements, which are haphazardly enforced in any event; and

(iii) spraying has been routinely carried out within the spray-free buffer zones (originally set at three kilometres and then increased to 10 kilometres) that Colombia unilaterally established in order to

[24] *Ibid.*, Chap. 4, para. 4.62.

[25] R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008*, pp. 1, 23 (Jan. 2011). ER, Vol. II, Annex 1.

minimize harm to human settlements and ecologically-sensitive areas, including those in Ecuador.

In short, despite its unsupported assertions to the contrary, the evidence before the Court shows that Colombia has carried out its aerial spraying programme along the border in a manner that virtually assures the deposit of highly toxic herbicidal mixtures deep inside Ecuador.

1.13 **Chapter 3** responds to Colombia's efforts to cast doubt upon the probative accuracy and reliability of the evidence presented by Colombia in the *Memorial*, with regard to the risks and harms to people (including indigenous peoples), plants and animals that have been inflicted in Ecuador. Contrary to the *Counter-Memorial*'s claim that the *Memorial*'s evidence of harm is unreliable and uncorroborated[26], Ecuador shows the opposite. In fact, the newly acquired spray flight data from the U.S. State Department (which Ecuador did not receive until after the *Memorial* was submitted) confirms the near-perfect correlation between the times and locations of spraying near the Ecuadorian border and the complaints of spraying and harm, including destruction and injury to vital crops for subsistence farmers. Such reports, which are memorialized in witness testimony, are corroborated by contemporaneous medical records, press reports and independent field missions. The UN Special Rapporteur on the Right to

[26] CCM, Chaps. 1, 5, 7 and 9, paras.1.32, 5.43, 7.30, 7.82, 7.107, 7.121, 7.128, 7.134, 7.141, 7.143, 7.148, 7.151, 7.156, 7.180-7.182, 7.186, 9.123, 9.131-9.132.

Health has described these reports as "credible" and "reliable", thereby confirming their probative authority[27]. Moreover, the harms to human health reported by the witnesses – including injuries to the eyes, skin, respiratory and digestive systems – correspond to the known harms caused by the two principal elements in all of Colombia's herbicidal spray mixtures (glyphosate and POEA), as widely reported in authoritative scientific literature and as specified in explicit warning labels prepared for these products by the manufacturers. Further, the witnesses' descriptions of a pattern of strikingly similar and simultaneous harm to multiple plant species is consistent with exposure to the use of indiscriminate herbicides rather than to disease or insect infestation, which would typically only attack a particular plant species. Colombia has failed to provide any evidence whatsoever for any other plausible cause for the damage to plants and the environment and the infirmities reported by the residents of Ecuador's border regions – including indigenous peoples – in close proximity to repeated aerial sprayings.

1.14 In **Chapter 4**, Ecuador shows that Colombia has disregarded its international legal obligations with respect to transboundary environmental impact assessment ("EIA") and due diligence. In this regard, Ecuador has taken

[27] *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, A/HRC/7/11/Add.3, para. 17 (4 Mar. 2007). EM, Vol. II, Annex 31.

careful account of the approach taken by the Court in its recent judgment in the *Pulp Mills* case, which confirms the obligation under general international law to carry out such an assessment[28]. Against this background, it is no surprise that the Parties agree that Colombia was required by international law to carry out a transboundary EIA, before it began its aerial spraying near the border with Ecuador[29]. The Court has two significant questions to address: the first is a legal question, namely what are the requirements for such an EIA; the second is a simple question of fact, namely were those requirements met? The arguments and evidence before the Court make it abundantly clear that the minimum requirements under international law for an EIA were not met by Colombia before it authorised aerial spraying, and they have not been met subsequently. Similarly, Colombia has never assessed the effects of the spraying operations on indigenous peoples, as required by ILO Convention No. 169.

1.15 Indeed, Colombia concedes that no EIA (transboundary or otherwise) was carried out either before or after spraying began along the border with Ecuador. Colombia justifies that omission on the grounds that its domestic law exempts the spraying programme from being subject to any EIA requirement. The argument lacks merit, if only because on this approach any State would be able to circumvent its international obligations by invoking inadequate domestic laws.

[28] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 60, para. 204.

[29] *See infra* Chap. 4, para. 4.1 (citing CCM, para. 1.40).

Colombia is not entitled to be able to claim to circumvent its international legal obligations by invoking its domestic laws, particularly when it has consciously structured and applied those laws in order to avoid having to conduct an EIA that would expose the spray programme's danger to human health and the environment. This is all the more so in respect of the clear and express obligations of assessment that apply in relation to indigenous peoples. The manifest inadequacy of Colombia's argument here is made clear by the fact that the urgent need for an EIA was recognized by Colombia's own Ministry of Environment, the government body charged with overseeing and enforcing environmental regulations. For several years this Ministry repeatedly ordered the agency responsible for the aerial spraying to carry out, and present for approval, required environmental impact studies. Each of these orders was ignored. The Ministry of Environment then imposed sanctions, but these too failed to secure compliance with the obligation to carry out the required impact studies. Similar orders and appeals for impact assessments by Colombia's courts, Comptroller General and Office of the Ombudsman were all disregarded. In short, Colombia's spraying of over 1.2 million litres of herbicide within 10 kilometres of Ecuador has been conducted without ever having been subjected to a prior impact assessment to determine its environmental and human health consequences, including the effects on indigenous peoples.

1.16 In **Chapters 5** to **8**, Ecuador addresses Colombia's legal arguments, which are no more persuasive than its manifestly inadequate treatment of the facts. There is no dispute between the Parties as to the Court's jurisdiction to apply any of the international legal obligations incumbent upon Colombia that have been invoked by Ecuador, including under the Pact of Bogota and the 1988 UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances ("1988 Narcotics Convention"). As regards the 1988 Narcotics Convention, Ecuador notes that Colombia has not challenged jurisdiction as such, but rather raised issues as to the meaning and legal effects of that instrument, an issue that goes to the merits and not jurisdiction. Colombia has entirely misunderstood the 1988 Narcotics Convention, and its proper meaning and effect are addressed in Chapter 6[30].

1.17 **Chapter 5** responds to Colombia's case on territorial sovereignty. It makes clear that the Parties are in agreement that respect for a State's territorial sovereignty is a fundamental obligation under both general international law and treaties applicable as between the Parties, and that breach of that obligation gives rise to a distinct and separately actionable claim. The Chapter shows that Colombia has violated Ecuador's territorial sovereignty by causing toxic amounts of herbicide to be deposited in Ecuador in a manner that fails to respect Ecuador's

[30] *See infra* Chap. 6, paras. 6.9-6.28.

sovereignty under international law, including by imposing Colombia's standards on that territory.

1.18 **Chapter 6** refutes Colombia's arguments on international environmental law. Applying the facts to the law, the Chapter establishes that Colombia has failed to meet its minimum obligations with respect to the obligation to prevent transboundary risks and harm; has failed to carry out any transboundary environmental impact assessment prior to spraying near Ecuador; has failed to cooperate with Ecuador; and has not applied a precautionary approach. In particular, Ecuador shows that the existence of a real and demonstrable risk that the herbicidal mixtures would drift into Ecuador and cause harm was known to Colombia, and that international law required Colombia to carry out a transboundary EIA prior to engaging in that risky and hazardous activity. However, none was done, either before or after the commencement of spraying, as Colombia recognizes[31]; it may have required an Environmental Management Plan, but that plan did not amount to an environmental assessment, and was in any event applied in a manifestly inadequate manner. Moreover, Colombia has breached its duty of exercising due diligence in authorizing and conducting the spraying programme by, among other things, allowing the use of inappropriate chemicals; failing to ensure that its aircraft carry out spraying operations in ways that minimize drift, including at appropriate height, speed, application rate and

[31] CCM, Chap. 6, paras. 6.23-6.24, 6.26.

time of day; by failing to give warning before spraying; and by spraying within 10 kilometres of the border with Ecuador. Further, Colombia has breached its duty to cooperate with Ecuador in good faith, as required by general international law, by the 1988 Narcotics Convention, by ILO Convention No. 169 and by the 1992 UN Convention on Biological Diversity. Colombia has manifestly failed to consult with Ecuador before spraying near the border, failed to notify Ecuador of the chemical compositions of the various spray mixtures, and failed to undertake joint monitoring of the impact of the spraying programme.

1.19 In **Chapter 7**, Ecuador responds to the arguments Colombia has made in relation to its breaches of human rights law and the particular obligations that international law imposed upon it to take specified measures to protect indigenous peoples. In so doing, it refutes Colombia's contention that its actions have not affected the human rights of those living in Ecuador[32]; that Colombia's human rights obligations are geographically restricted to the territory of Colombia, notwithstanding the Parties' shared legal space[33]; and that the indigenous people of Ecuador have not suffered special, separately cognizable harm under international law[34].

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[32] CCM, Chap. 9, paras. 9.75-9.79, 9.93-9.94, 9.101-9.109, 9.118, 9.123-9.125, 9.130-9.132, 9.140-9.143, 9.152.

[33] *Ibid.*, Chap. 9, paras. 9.10-9.50, 9.64, 9.72, 9.85, 9.114.

[34] *Ibid.*, Chap. 9, paras. 9.153-9.169.

1.20 In **Chapter 8**, Ecuador refutes Colombia's arguments regarding the remedies to which Ecuador is entitled for the breaches of international law described in the preceding Chapters. Ecuador shows that its approach to remedies is based upon and fully consistent with the practise previously adopted by the Court, by which the quantification of monetary damages is deferred to a subsequent phase of proceedings. In regard to the cessation of Colombia's unlawful acts, Ecuador seeks, *inter alia*, an order from the Court that Colombia permanently cease and desist from carrying out aerial spraying operations within 10 kilometres of the Ecuador/Colombia border – a spray-free buffer zone that Colombia itself claims to have implemented since 2007 (on a voluntary and non-permanent basis) to prevent harms to Ecuador.

1.21 The *Reply* concludes with Ecuador's **Submissions**. The Submissions set forth in the *Memorial* are maintained in full, subject to only one difference: in the *Reply* Ecuador has clarified its request by seeking a specific order from the Court that Colombia shall refrain from aerial spraying *within 10 kilometres* of the border between the two countries. Ecuador considers that this is the minimum spray-free buffer zone necessary to protect Ecuador from further harms, and notes that Colombia itself has accepted, albeit on a temporary and non-binding basis, a buffer zone extending 10 kilometres from the border with Ecuador in which it says it has not conducted aerial spraying operations since 2007. Ecuador notes that Colombia's declaration of a 10 kilometre spray-free zone was reconfirmed in

a public statement by the Ministry of Foreign Relations on 11 November 2010[35]. Ecuador considers this, and previous Colombian declarations of a similar nature, to constitute a recognition of the reasonableness of a 10 kilometre buffer zone required for prevention of damage to Ecuador. What it seeks from the Court is an order making permanent and binding what Colombia regards as merely temporary and voluntary.

1.22 Ecuador's *Reply* consists of 5 volumes. **Volume I** is the main text. **Volumes II-V** contain supporting Annexes. In particular, **Volume II** contains expert reports, which are presented in the following order:

- *Annex 1* is a report by R. John Hansman, Ph.D. (Professor of Aeronautics and Astronautics at the Massachusetts Institute of Technology and an expert in aviation) and Dr. Carlos F. Mena, Ph.D. (Professor of Geography and Ecology in the School of Life and Environmental Sciences at the Universidad San Francisco de Quito and an expert in geographical information systems). The Hansman & Mena Report evaluates the flight data that were recorded by the spray planes' on-board instruments and obtained by Ecuador from the U.S. Department of State. It shows that, on tens of thousands of occasions, the spray programme violated the operational requirements most relevant to the prevention of spray drift, including, *inter alia*, aircraft

[35] Republic of Colombia, Ministry of Foreign Affairs, Press Release (11 Nov. 2010). ER, Vol. V, Annex 156.

speed, altitude of herbicide dispersion, application rate, and time of day of spraying.

- *Annex 2* is a report by Dr. Durham K. Giles, Ph.D. (Professor of Biological and Agricultural Engineering at the University of California, Davis and an expert in pesticide drift modeling). The Giles Report applies the internationally accepted model for predicting drift of aerially applied pesticides (predicting grams of herbicide deposited per hectare downwind), using data that reflect actual flight conditions as recorded in the Colombian flight data obtained from the U.S. Department of State. Dr. Giles shows that significantly more herbicide is deposited at distances as far as 10 kilometres from the site of application than was appreciated by the modeling commissioned by Colombia, which relied upon inaccurate assumptions regarding compliance with the spray programme's operational parameters.

- *Annex 3* is a report by Dr. Stephen C. Weller, Ph.D. (Professor of Weed Science at Purdue University in West Lafayette, Indiana and an expert in the dose-response of plants to glyphosate). The Weller Report compares the downwind deposition predictions generated by Dr. Giles's drift modeling with known toxicity thresholds for plants. Dr. Weller shows that the amount of herbicide deposited at distances at least 10 kilometres from the site of application is enough to cause significant harm to plants, including food crops.

- *Annex 4* is a report by Dr. Henrik Balslev, Ph.D. (Professor of Biological Sciences at Aarhus University in Denmark and an expert in the ecology of Ecuador). Dr. Balslev's report describes the extraordinary biodiversity of the area around Ecuador's border with Colombia and explains the vulnerability of its multiple ecosystems to

perturbations, including those caused by exposure to chemical herbicides.

- *Annex 5* is a report co-authored by Dr. Norman E. Whitten, Ph.D. (Professor Emeritus of Anthropology and Latin American Studies at the University of Illinois at Urbana-Champaign); Dr. William T. Vickers, Ph.D. (Professor Emeritus of Anthropology at Florida International University); and Dr. Michael Cepek (Assistant Professor of Anthropology at the University of Texas at San Antonio). The three co-authors are experts in the anthropology of northern Ecuador, including the indigenous peoples, Afro-Ecuadorians and non-indigenous farmers that inhabit the region. The Whitten *et al*. Report explains that these people, many of whom live on the margin of subsistence, are acutely vulnerable to damage to their health and to the plant and animal life upon which they depend.

- *Annex 6* is a report by Charles A. Menzie, Ph.D. and Pieter N. Booth, M.S. The co-authors previously submitted a report that was annexed to the *Memorial*. The present report responds to criticisms made in the report of Stuart Dobson, Ph.D., which was appended to the *Counter-Memorial*. The Menzie & Booth Report shows that the conclusions in their original report have been validated by the subsequent flight data evaluation, drift modeling and dose-response analysis that is presented in Annexes 1-3. They further show that the appropriate risk management strategy is to implement a buffer zone of sufficient breadth to protect the vulnerable ecologies and human communities in Ecuador from harm caused by spray drift, and that the 10-kilometre buffer zone sought by Ecuador is consistent with international standards.

- *Annex 7* is a report by Reinhard Joas, Ph.D, who is an expert on chemicals regulation and served as the technical advisor to the European Commission in developing the Directive that prohibits in the European Union aerial spraying as a means for dispersing pesticides. The Joas Report describes the reasoning behind the EU's decision to ban aerial spraying, and shows that Colombia's programme would not be permitted in the EU.
- *Annex 8* is a report by Ms. Claudia Rojas Quiñonez, Esq., a Colombian lawyer and Lecturer at the Universidad Externado de Colombia, where she specializes in Colombian environmental law. The Rojas Report shows that Colombia, in carrying out its aerial spraying programme, has breached its municipal law by, among other things, failing to carry out an environmental impact assessment, failing to comply with the terms of its Environmental Management Plan, and failing to comply with applicable laws regulating the use of pesticides.

Volumes III-V contain the remaining Annexes, which are presented in the following order: (i) Regulations and Technical Reports; (ii) Verification and Observation Reports; (iii) United States Government Documents; (iv) News Articles; (v) Multilateral Organisation Documents; (vi) Other Documents; (vii) Colombian Government Documents.

CHAPTER 2.

COLOMBIA'S MISREPRESENTATIONS REGARDING THE SPRAY PROGRAMME

2.1 In this Chapter, Ecuador shows that the *Counter-Memorial*'s portrayal of the spray programme is a complete misrepresentation of the actual facts. Colombia entirely distorts reality in order to hide the true danger the spray programme poses to the people, plants, animals and ecology of Ecuador.

2.2 According to the *Counter-Memorial*, the spray programme consists of spraying limited quantities of an essentially non-toxic mixture of chemicals in strict conformance with a world-class environmental management plan in a manner that assures no drift across the border into Ecuador. Nothing could be further from the truth.

2.3 The grand deception begins with false assertions that the chemical composition of the various spray mixtures that Colombia has used are both publicly known and non-toxic. Contrary to the statements in the *Counter-Memorial*, Colombia has consistently refused to disclose the formula of the mixtures, identify all of their contents, or specify the proportions of each element; it has repeatedly denied Ecuador's explicit requests for this information; and, quite remarkably, Colombia has even withheld it from the Court, which can put a magnifying lens to the entire 513-page *Counter-Memorial*, and the 1,117 pages of annexes, without finding the complete formula for the spray mixtures that are at the centre of this dispute.

2.4 Even without knowledge of the precise formula of the mixture, or the identification of all of its elements, the toxicity of the secret brew is well established. It is, indeed, designed and intended to kill every plant that it touches; and its toxicity to humans and animals is undeniable. True, its effects on people might not necessarily be fatal, but the evidence that it harms the skin, the eyes, the respiratory system and the digestive system is not only overwhelming, but also admitted, expressly, by the manufacturers of the mixture's main components, by objective scientists, and by governments of third States.

2.5 Colombia's pantomime continues with what turns out to be the biggest falsehood of all: that Colombia's aerial spraying programme is carried out in a manner that fully complies with all of the operational parameters touted in the *Counter-Memorial*, and in Colombia's so-called "Environmental Management Plan", including supposedly stringent restrictions on aircraft speed, height of spray release, droplet size, application rate and time of day spraying is done – all of which, the *Counter-Memorial* boasts, is to ensure that the spray mixture falls only on legitimate targets (*i.e.*, coca plants) and has minimal, if any, off-target effects, let alone impacts in Ecuador. Tellingly, although Colombia emphasizes that it closely monitors the spray flights and records all of this information about them, and that it has quarterly and semi-annual reports affirming that all of these operational parameters were consistently complied with over the seven-year

period when flights were conducted along or close to the border with Ecuador, it has supplied *none* of these actual reports to the Court.

2.6 Now we know why.

2.7 Subsequent to the filing of its *Memorial*, Ecuador was able to obtain all of these data from a different source: the government of the United States of America, which finances the aerial spraying programme and receives all of the operational data about the flights – speed, altitude, application rate, time of day, etc. – directly from the U.S. contractor that furnishes the pilots and conducts the spraying on behalf of the government of Colombia. The data show conclusively that the parameters Colombia itself asserts are essential to maintain the safety of the programme, and avoid off-target spray drift, were systematically ignored on a vast scale involving literally tens of thousands of noncompliant flights along or near the border with Ecuador, virtually guaranteeing that the toxic spray mixture would drift into Ecuadorian territory and impact humans, animals, crops, forests, rivers and streams in Ecuador. The data show that the spray planes regularly – tens of thousands of times – flew too fast and too high, dropped too much spray in dangerously small droplets (which are more prone to drift) and at prohibited times of day, violating every safeguard Colombia allegedly required to assure the accuracy of the spraying and prevent the mixture from drifting off target or into Ecuador. Coupled with the testimonies of victims of the spraying inside Ecuador,

medical inquest reports, findings by UN Special Rapporteurs, and studies by experienced non-governmental organizations, the evidence is irrefutable that Colombia systematically violated its own regulations and repeatedly sprayed toxic chemicals that drifted into Ecuador between 2000 and 2007, causing substantial harm to humans, crops, flora and fauna, and to vulnerable ecosystems and the indigenous peoples and local residents who depend on them for their daily existence.

2.8 When Colombia's misrepresentations are revealed and set aside, what remains is overwhelming and incontestable proof that in carrying out its aerial spraying programme along and close to the border with Ecuador, Colombia violated Ecuador's sovereignty, and caused grievous harm and risk of harm to Ecuadorian nationals, including indigenous peoples, and their livelihoods, as well as the environment.

2.9 **Section I** of Chapter 2 addresses the contents of the spray mixture itself. It begins by demonstrating that, contrary to the claims in the *Counter-Memorial*, Colombia has never disclosed the full contents of the herbicide spray. The *Counter-Memorial*'s claim that only two glyphosate-based products have been used (Roundup SL and GLY-41) as the principal components of the spray is proven false. In fact, Colombia used a different, more dangerous product, Roundup Export, and discontinued its use only after the United States

Environmental Protection Agency ("U.S. EPA") gave it the highest possible toxicity rating and determined, among other things, that it causes permanent eye damage to humans. Moreover, the *Counter-Memorial* identifies only one of the multiple additional surfactants used in these products – POEA – but even there provides only the most general description of a class of toxic chemicals. Colombia's admission that POEA is used says nothing about the toxicity of the specific form of POEA included in the herbicide. Nor does the *Counter-Memorial* acknowledge the scientific consensus that all forms of POEA are highly toxic. The evidence shows that even the two herbicides that Colombia admits in the *Counter-Memorial* to using as the main ingredients in its spray are harmful, including to human health and the environment.

2.10 The same is true with respect to Colombia's addition of Cosmo-Flux 411F to the spray – a chemical that is produced and used only in Colombia. Although Colombia has identified the name of the product, that entitles it to no award for transparency. The composition of Cosmo-Flux 411F, itself a mixture, is kept confidential. Further, the *Counter-Memorial* does not inform Ecuador or the Court about the identity or toxicity of any of the other chemicals that Colombian and U.S. government agencies have admitted are or may be present in the mixture. These include, at the very least, formaldehyde, one or more anti-foaming agents, dioxin, 1, 4 dioxane and COSMO IN D. All of these chemicals pose significant danger to human health and the environment.

2.11 In **Section II**, Ecuador shows that the *Counter-Memorial* misrepresents Colombia's compliance with its self-imposed operational parameters, which are intended (the Court is told) to avoid spray drift and the resulting danger to non-target humans, animals and plants. These parameters include restrictions on aircraft speed, height of spray application, droplet size, application rate and time of day when spraying in permitted. Colombia's demonstrably false representations about its "strict compliance" with these parameters – its main defense to Ecuador's charge that it deposited harmful sprays over Ecuador – permeate the *Counter-Memorial*, which invokes the parameters as a shield against Ecuador's claims no fewer than 30 times. They also pervade Colombia's diplomatic communications to Ecuador and international organizations, including the Inter-American Commission on Human Rights, which Colombia falsely assured of its faithful compliance with its operational requirements.

2.12 Colombia's own flight data reveal all of these statements to be manifestly untrue. Between November 2009 and March 2010, Ecuador obtained electronic flight databases from the U.S. Department of State, which provides operational support and financing for Colombia's spray programme. The flight information, recorded by the spray planes' on-board data systems, and obtained by Ecuador pursuant to the U.S. Freedom of Information Act[36], includes the airspeed, altitude, application rate, time of day, type of aircraft, and precise geographic location

[36] United States, Freedom of Information Act, 55 U.S.C. § 552.

(longitude and latitude coordinates) at the time of spraying, among other data. The records, which include 114,525 spray lines within 10 kilometres of Ecuador's border, reveal Colombia's pervasive disregard for all of its own operational parameters. The records prove that on tens of thousands of occasions Colombia violated its self-imposed operational restrictions on, among other things, aircraft speed, and height of spray release, application rate, and time of day. Colombia's wholesale failure to abide by its own standards for preventing spray drift not only eviscerates Colombia's effort to prove that the toxic spray mixture did not fall on Ecuador, but assures that it did.

2.13 **Section III** of Chapter 2 shows that the *Counter-Memorial* also misrepresents Colombia's alleged respect for buffer zones and other areas it promised would be off-limits to spraying. To the contrary, Colombia has routinely sprayed in close proximity to sensitive areas that have been set aside for use by indigenous peoples. Colombia has also sprayed over or near human settlements. This is demonstrated by the flight data obtained from the U.S. Department of State.

2.14 Finally, in **Section IV**, Ecuador proves that when the flight data is used in the internationally accepted drift model that Colombia itself relies upon in the *Counter-Memorial*, the results demonstrate that the amount of spray deposited in Ecuador far exceeds what is needed to kill or significantly injure non-target

plants, including the crops that sustain the livelihood of the local population, and is capable of inflicting significant harm on humans and animals, as well.

Section I. Colombia's Misrepresentations Regarding the Spray Mixture

2.15 In the *Counter-Memorial*, Colombia claims that it has disclosed the complete chemical composition of the spray mixture. It asserts, for example, that the formula has been "a matter of public knowledge" since 2001[37], and states at paragraph 6.3 that it has never "sought to conceal or keep secret the formula of the sprayed mix". Neither of these assertions is true. Although Colombia identifies the main chemical components of some (but not all) of the mixtures it has sprayed, it has never revealed their precise formulations or the identities of all of the additives. This information is conspicuously absent from the *Counter-Memorial*.

2.16 The *Counter-Memorial* states that, in addition to water, the herbicide spray has three main components: (1) a glyphosate-based product (Roundup SL until it was replaced by GLY-41, both of which contain glyphosate as the "active ingredient"); (2) a surfactant called POEA; and (3) an adjuvant called Cosmo-

[37] Counter-Memorial of Colombia, Vol. I, Chaps. 4, 5, 6 and 7, paras. 4.42, 5.96, 5.109, 6.2-6.3, 6.5-6.6, 6.10-6.11, 7.99 (29 Mar. 2010) (hereinafter "CCM").

Flux 411F[38]. With respect to the risk posed to human health and the environment, the *Counter-Memorial* claims that none of these chemicals is harmful. It asserts at paragraph 7.187, for example, that "[t]here is no scientific evidence of serious threats to human and animal health" posed by the spray mixture[39]. In this section, Ecuador demonstrates that these are blatant misrepresentations, which drastically understate the spray's ability to harm Ecuador's people and natural environment.

A. THE GLYPHOSATE-BASED PRODUCT

2.17 In asserting that Colombia has never "conceal[ed] or ke[pt] secret the formula of the sprayed mix"[40], the *Counter-Memorial* is specific in identifying the only two glyphosate-based products that it claimed Colombia has ever used. It states: "since 2000, only two glyphosate-based formulated products have been used, namely, **Roundup SL** and **GLY41**"[41]. As described below, the evidence contradicts the *Counter-Memorial*. Colombia has used additional highly toxic glyphosate-based formulations. Moreover, the *Counter-Memorial* understates the toxicity of Roundup SL and GLY-41.

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[38] *Ibid.*, Chap. 4, paras. 4.42-4.56. *See also* Report by the Anti-Narcotics Directorate of the Colombian National Police (DIRAN), p. 306 (8 Feb. 2010) (hereinafter "DIRAN Report"). CCM, Vol. II, Annex 67.

[39] *See also, e.g.*, CCM, Chaps. 1 and 7, paras. 1.34(2), 7.10, 7.13.

[40] CCM, Chap. 6, para. 6.3.

[41] *Ibid.*, Chap. 4, para. 4.50 (emphasis added); *see also* Report by the Colombian Agriculture and Livestock Institute (ICA), p. 288 (29 Jan. 2010). CCM, Vol. II, Annex 65.

1. Roundup Export and Roundup Ultra

(a) Roundup Export

2.18 According to correspondence between the U.S. EPA and the Monsanto Company, the manufacturer of the herbicide, the spray that Colombia actually used was **Roundup Export**[42]. Colombia's use of Roundup Export has been confirmed by the U.S. EPA[43].

2.19 Roundup Export is a highly toxic herbicide that, as its label makes clear, is "Not Registered for use in the United States of America"[44]. Under the heading "Hazards to Humans and Domestic Animals", it warns:

> "Keep out of reach of children.
>
> **DANGER!**
>
> CAUSES IRREVERSIBLE EYE DAMAGE.
>
> HARMFUL IF SWALLOWED OR INHALED.
>
> MAY CAUSE SKIN IRRITATION.
>
> Do not get in eyes, on skin or on clothing.
>
> Avoid breathing vapor or spray mist.
>
> Wash thoroughly with soap and water after handling.

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[42] Freedom of Information Act Correspondence With United States Environmental Protection Agency Producing Email from Stephen J. Wratten, Monsanto Company, to Jay Ellenberger, United States Environmental Protection Agency (30 Oct. 2001). ER, Vol. IV, Annex 118.

[43] Freedom of Information Act Correspondence With United States Environmental Protection Agency Producing Roundup Export Label (3 Mar. 2009). ER, Vol. IV, Annex 112.

[44] *Ibid.*

Remove contaminated clothing and wash before reuse"[45].

2.20 Further reflecting the danger that Roundup Export poses for human health, its label provides the following medical instructions:

> "FIRST AID: IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Get medical attention.
>
> IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing. Wash clothing before reuse.
>
> IF SWALLOWED, this product will cause gastrointestinal tract irritation. Immediately dilute by swallowing water or milk. Get medical attention.
>
> NOTE TO PHYSICIANS: Probable mucosal damage may contraindicate the use of gastric lavage.
>
> IF INHALED, remove individual to fresh air. Get medical attention if breathing difficulty develops"[46].

2.21 In fact, when the U.S. EPA reviewed the formulation in 2002, it concluded that the "product used in the coca eradication program", Roundup Export, warranted the *highest* possible toxicity rating: "toxicity category I"[47].

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[45] *Ibid.*

[46] Freedom of Information Act Correspondence With United States Environmental Protection Agency Producing Roundup Export Label (3 Mar. 2009). ER, Vol. IV, Annex 112.

[47] United States Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, *Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia, Response from EPA Assistant Administrator Johnson to Secretary of State*, p. 8 (19 Aug. 2002) (hereinafter "EPA 2002 Analysis"). ER, Vol. III, Annex 45.

Among the reasons for concluding that the spray was so dangerous was the fact that it causes "irreversible eye damage"[48].

2.22 Given the danger posed by spraying such a highly toxic substance, the U.S. EPA determined that it was far too toxic for use in Colombia's aerial spraying programme. It therefore recommended in August 2002 that a less harmful alternative with a "lower potential for acute toxicity" be used[49]. This change was necessary, the agency determined, "due to the acute eye irritation caused by the concentrated glyphosate formulated product"[50].

2.23 Nevertheless, Colombia appears to have continued to use Roundup Export. Thus, Colombia regularly sprayed within 10 kilometres of Ecuador a product with the highest possible toxicity rating that causes "irreversible eye damage" and "skin irritation" and is "harmful if swallowed or inhaled"[51]. The only change in formulation acknowledged in the *Counter-Memorial* did not occur until 2005. It is no wonder that during the period when Roundup Export was used, many of Ecuador's border residents reported serious eye damage, skin

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[48] *Ibid.*; Freedom of Information Act Correspondence With United States Environmental Protection Agency Producing Roundup Export Label (3 Mar. 2009) (indicating on the Roundup Export label that the product "CAUSES IRREVERSIBLE EYE DAMAGE"). ER, Vol. IV, Annex 112.

[49] EPA 2002 Analysis, *op. cit.*, p. 8. ER, Vol. III, Annex 45; *see also ibid.*, pp. 18-19.

[50] *Ibid.*

[51] Freedom of Information Act Correspondence With United States Environmental Protection Agency Producing Roundup Export Label (3 Mar. 2009). ER, Vol. IV, Annex 112.

irritation and respiratory difficulty following spraying events[52]. As Ecuador described in the *Memorial* and further elaborates in Chapter 3 of this *Reply*, large numbers of Ecuadorians exhibited these precise symptoms upon exposure to Colombia's spray mixture during this period.

(b) Roundup Ultra

2.24 In addition to the troubling evidence regarding the use of Roundup Export, the *Counter-Memorial* fails to acknowledge the use of another glyphosate-based product. Contrary to the representations made in the *Counter-Memorial*, Colombia has on several occasions informed Ecuador that it used **Roundup Ultra**. For example, in a diplomatic note dated 14 July 2001, Colombia stated:

> "The herbicide used by the Program of Eradication of Illicit Crops - PECI- is a commercial formulation made with glyphosate, which has the registered name of Roundup Ultra, manufactured by the company Monsanto Inc."[53].

2.25 Colombia's diplomatic note represented that Roundup Ultra "is at the bottom of the universally accepted toxicity scale" and assured Ecuador that "this product" is "less irritating" than "dish detergents", and its toxicity is comparable

[52] *See infra* Chap. 3, Section I(A-C).

[53] Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador (14 July 2001). EM, Vol. II, Annex 42.

to "baby shampoo"[54]. (As explained in paragraph 2.21, at the time of that note the U.S. EPA was reporting that the product being sprayed had the highest possible toxicity rating).

2.26 Colombia's representation that it used Roundup Ultra was repeated at a bilateral meeting with Ecuador from 13 to 15 February 2002. Colombia then stated that the formulation "currently" in use was "Roundup Ultra", and that "*[i]n the future*" Colombia would "use Roundup SL"[55]. Thus, on at least two occasions – in July 2001 and February 2002 – Colombia represented to Ecuador that it was using Roundup Ultra. These representations cannot be squared with the *Counter-Memorial*, where Colombia admits to using only Roundup SL and GLY-41. Nor are they consistent with the U.S. government's statements that the actual product used by Colombia at that time was Roundup Export.

2.27 Assuming *quod non* that Colombia was accurate when it said it used Roundup Ultra, Colombia was still wrong when it told Ecuador that Roundup Ultra is no more dangerous than "baby shampoo". Roundup Ultra is also a dangerous product. For example, the Roundup Ultra label contains the following warnings:

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[54] *Ibid.*

[55] Republic of Ecuador, Ministry of Environment, *Joint Report from the Workshop: Eradication of Illicit Crops, Bogotá, Colombia*, p. 10, para. 14 (13-15 Feb. 2002) (emphasis added). EM, Vol. IV, Annex 163.

> "Keep out of reach of children.
>
> **CAUTION!**
>
> CAUSES EYE IRRITATION.
>
> Avoid contact with eyes or clothing.
>
> **FIRST AID: IF IN EYES**, flush with plenty of water. Get medical attention if irritation persists"[56].

2.28 Ecuador doubts that the authors of the *Counter-Memorial* – or anyone else, for that matter – would consider shampooing their babies with this product. And not only babies are advised to avoid it. The label warns: "Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application"[57].

2.29 The Roundup Ultra label also makes clear that it is dangerous for animals, warning that:

> "ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours"[58].

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[56] *United States Roundup Ultra Label*. ER, Vol. III, Annex 27. The Advisor on the Plan Colombia Illicit Eradication Program stated that the spraying programme used a formulation that is "commercialized in the United States under the name Roundup Ultra". *See* Republic of Colombia, Advisor on the Plan Colombia Illicit Crop Eradication Program, *Certain Toxicological and Technical Considerations For Aerial Spraying With Glyphosate on Illicit Crops, Bogotá, Colombia*, p. 2 (9 July 2001). ER, Vol. V, Annex 138.

[57] *United States Roundup Ultra Label*. ER, Vol. III, Annex 27.

[58] *Ibid.*

2.30 Accordingly, even if Colombia did use Roundup Ultra (contrary to its assertions in the *Counter-Memorial* and the U.S. government's reports), it still sprayed along the border with Ecuador a highly toxic product that is dangerous to human health and the environment.

2. Roundup SL and GLY-41

2.31 The two glyphosate-based products that Colombia admits to spraying – Roundup SL and GLY-41 – are no less dangerous to humans, animals, crops or the environment in Ecuador than Roundup Export and Roundup Ultra.

(a) Roundup SL

2.32 The danger of Roundup SL to human health is confirmed by the product label, which emphasizes its hazardous nature, particularly with respect to human eyes and skin:

> "Avoid contact with eyes and skin. Causes irritation. Upon completion of work, change clothes and wash with plenty of soap and water"[59].

2.33 The label further instructs: "In the event of contact with eyes, wash them immediately with plenty of water for 15 minutes" and "[i]f it falls on the skin,

[59] *Colombia Roundup SL Label*. EM, Vol. III, Annex 115.

wash with plenty [of] soap and water"[60]. These warnings are similarly emphasized by the Roundup SL Technical Data Sheet, which states that the product causes "moderate" to "severe" eye irritation and is irritating to the skin[61].

2.34 The Roundup SL label also warns against ingesting the product, stating: "If ingested, drink water to dilute it. Call a doctor immediately or bring the patient to a doctor and show them a copy of this label"[62]. Similarly, the Technical Data Sheet unambiguously warns that it is "harmful if ingested"[63]. It also warns that the product is of "middle toxicity to rainbow trout", thus making it hazardous to fish, and that it "must not be poured near channels, drains, nor running water or water reservoirs"[64]. This directive is repeated by the label, which states: "Do not contaminate water sources. Do not apply or pour surplus product directly over water bodies"[65].

2.35 Although the *Counter-Memorial* brushes aside these warnings and claims that Roundup SL is incapable of causing harm, in fact, Colombia was forced to

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[60] *Ibid.*

[61] Safety Data Sheet for Roundup SL, p. 424. CCM, Vol. III, Annex 133.

[62] *Colombia Roundup SL Label*. EM, Vol. III, Annex 115.

[63] Safety Data Sheet for Roundup SL, p. 423. CCM, Vol. III, Annex 133.

[64] *Ibid.*

[65] *Colombia Roundup SL Label*. EM, Vol. III, Annex 115. The label also makes clear that the spray will kill or seriously injure crops and other beneficial plants: "During application, avoid allowing the product to fall on leaves or green parts of the stems of crops". *Colombia Roundup SL Label*. EM, Vol. III, Annex 115.

abandon spraying of the product precisely because of its harmfulness. This is clear from footnote 312, which admits that "[a]s of 2005, with the purpose of avoiding the possible effects associated with the use of POEA surfactant contained in Roundup SL", specifically the "the risk of eye irritation", the "Colombian Government decided to use a new glyphosate-based formulated product, called GLY41"[66].

2.36 Thus, the *Counter-Memorial* leaves no doubt that for at least the first five years of spraying adjacent to and near Ecuador – *i.e.*, between 2000 and 2005 – Colombia sprayed at least one (and possibly more) glyphosate formulation that had to be discontinued due to the danger it posed to human health. There can be no truth to Colombia's assertion that Roundup SL is not harmful. The *Counter-Memorial* itself admits otherwise.

(b) GLY-41

2.37 The *Counter-Memorial* also ignores the dangers posed by GLY-41, the herbicide with which Colombia replaced Roundup SL in 2005, even though the label for GLY-41 cautions that the mixture is harmful to human health:

[66] CCM, Chap. 4, para. 4.50, n. 312. Notably, however, reports by the U.S. Government that describe the spray formulation during this time period do *not* reflect or otherwise acknowledge any such change.

"CAUTION: THIS PRODUCT CAUSES EYE IRRITATION. Avoid contact with eyes and clothes"[67].

2.38 The *Counter-Memorial* also ignores that the Safety Data Sheet for GLY-41, which expressly warns against allowing the product to come into contact with human skin:

> "In case of skin contact: Wash the skin immediately with water and soap. If possible, remove the shoes and the clothes of the patient. Contaminated clothes must be washed separately before wearing it again"[68].

2.39 The danger of inhaling GLY-41 is also stressed by the Safety Data Sheet:

> "In case of inhaling: Take the person to a fresh air area; if he/she is not breathing, provide artificial breathing and oxygen if necessary. LOOK FOR MEDICAL ASSISTANCE"[69].

2.40 The GLY-41 label leaves no doubt about the risk that it poses to animals, as well as humans:

> "Ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours"[70].

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[67] Label and Safety Data Sheet for GLY-41. CCM, Vol. III, Annex 134.

[68] *Ibid.*

[69] *Ibid.*

[70] *Ibid.*, p. 428. CCM, Vol. III, Annex 134. The label also makes clear that the chemical will destroy crops and other beneficial plants: "AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED ROOTS OR FRUIT OF CROPS, DESIRABLE

2.41 In keeping with its pattern of ignoring or excising evidence of the dangers posed by its spray products, and then extolling its studious reliance on substances as innocent as "baby shampoo", Colombia redacts from the English translation of the product label for GLY-41 (included in an annex to the *Counter-Memorial*) the pictorial warnings that graphically represent the danger the product poses to human health and the environment[71].

Figure 2.1. Excerpt From GLY41 Label[72]

According to the official Andean Community Technical Manual on Registration and Control of Pesticides, these warning symbols indicate that the applicator should use gloves and boots for protection, as well as a respirator mask. The applicator should also wash his or her body after using the product[73].

PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT". *Ibid.*

[71] *Colombia GYL-41 SL Label and Safety Data Sheet.* ER, Vol. III, Annex 28.

[72] *Ibid.*

[73] Andean Community, *Resolution 630, Andean Technical Manual for the Registration and Control of Chemical Pesticides for Agricultural Use*, p. 129 (25 June 2002). EM, Vol. II, Annex 17.

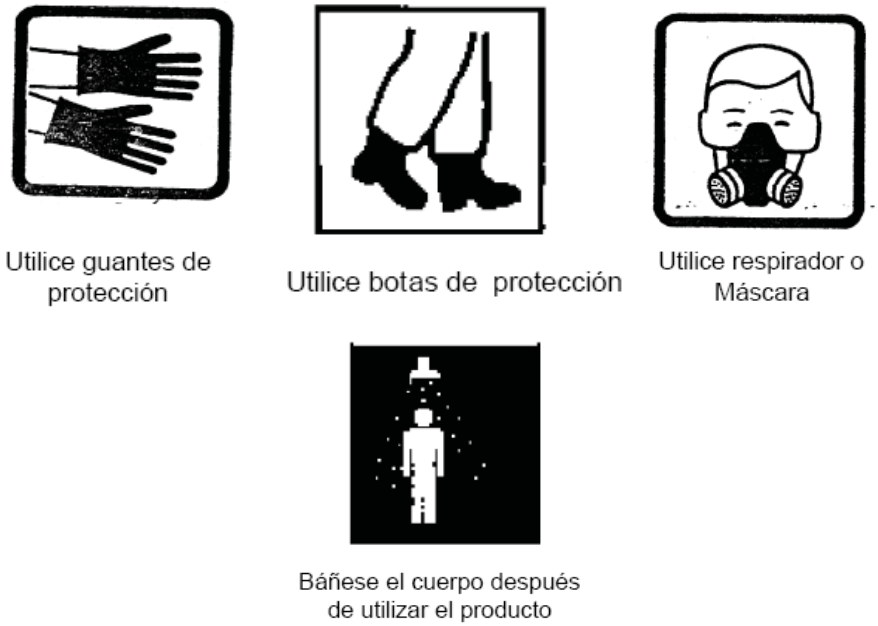

Figure 2.2. Warning Symbols From GLY-41 Label – Human Health

With respect to animals and the environment, the warnings dictate "do not contaminate watercourses" and "do not permit animals in the treated area"[74].

Figure 2.3. Warning Symbols From GLY-41 Label – Animals & Environment

[74] *Ibid.*

2.42 In short, GLY-41 bears no resemblance to baby shampoo. It is a dangerous product that poses serious risks for human health and the environment.

B. OTHER CHEMICALS

1. POEA

2.43 All glyphosate-based herbicides, including Roundup Export, Roundup Ultra, Roundup SL and GLY-41, use glyphosate as their "active ingredient", meaning that this chemical does the main work of killing plants. But glyphosate is *not* the only chemical in these glyphosate-based products, which are also called glyphosate-based "formulations". Such herbicides include additional chemicals known as "formulants"[75]. One class of "formulants" is composed of surfactants, which are designed to increase lethality by improving the glyphosate's ability to penetrate the plant[76]. Not only do these surfactants magnify the formulation's effect on plants, but they can be even more toxic to human health and the environment than glyphosate itself.

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[75] Formulants may also be called "inert ingredients" or "adjuvants". *See* Stephen C. Weller, Ph.D., *Glyphosate-Based Herbicides and Potential for Damage to Non-Target Plants Under Conditions of Application in Colombia*, p. 7 (Jan. 2011) (hereinafter "Weller Report"). ER, Vol. II, Annex 3.

[76] Keith R. Solomon et al., *Environmental and Human Health Assessment of the Aerial Spray program for Coca and Poppy Control in Colombia* , p. 23 (31 Mar. 2005) (hereinafter "Solomon et al., 2005"). CCM, Vol. III, Annex 116; EPA 2002 Analysis, *op. cit.*, p. 11. ER, Vol. III, Annex 45.

2.44 The only formulant that Colombia admits in the *Counter-Memorial* to using in its various spray mixtures is a surfactant called POEA[77]. But that admission reveals little, other than that Colombia sprays a hazardous product. POEA is not a single chemical, but instead describes an entire *category* of chemicals with a range of toxicities and effects[78]. Therefore, unless Colombia provides specific information about *which* POEA surfactant it uses, it is impossible for Ecuador (or the Court) to determine the precise toxicity of the POEA that has been sprayed.

2.45 Nevertheless, this much is clear: all chemicals that are classified as POEA are harmful to human health and to the environment. As discussed in the *Memorial*, POEA causes severe eye damage, among other serious health and environmental effects[79]. Even Colombia's expert report acknowledges that POEA is a "worst case for surfactant toxicity" and "has been identified as a major

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[77] POEA is an abbreviation for polyethoxylated tallow amine, also referred to as polyethoxyethylene alkylamine.

[78] Federal Republic of Germany, Federal Institute of Risk Assessment, Health Assessment Report POE-tallowamines, p. 6 (6 Sep. 2010). ER, Vol. III, Annex 26; Weller Report, *op. cit.*, p. 15. ER, Vol. II, Annex 3; Charles A. Menzie, Ph.D. & Pieter N. Booth, M.S., *Response to: "Critique of Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador," As Presented in: Counter-Memorial of the Republic of Colombia, Appendix*, p. 11 (Jan. 2011) (hereinafter "Menzie & Booth Report"). ER, Vol. II, Annex 6.

[79] *See* EM, Chap. 5, paras. 5.18-5.19; CCM, Chap. 4, para. 4.50, n. 312; EPA Analysis, 2002, *op. cit.*, p. 10. ER, Vol. III, Annex 45.

contributor to the aquatic toxicity of glyphosate formulations"[80]. According to the U.S. EPA, POEA causes severe skin irritation and is corrosive to the eyes[81]. A study of POEA published by Germany's Federal Institute of Risk Assessment (BfR) concluded that POEA is a skin irritant and skin sensitizer and is strongly irritating to the eyes, noting that POEA is a "surface-active substance" for which "certain ability to penetrate through biological membranes can be assumed"[82]. The study also recommended that POEA be labelled for acute oral toxicity due to "strong mucosal irritation" and the likely occurrence of "systemic effects after ingestion or inhalation"[83]. Colombia's own National Health Institute has stated that POEA may cause gastrointestinal damage, kidney and liver damage, affect the central nervous system, destroy red blood cells and induce breathing difficulties[84]. POEA has also been linked to problems with pregnancy and even

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[80] Dr. Stuart Dobson, *Critique of "Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador" Menzie et al.*, pp. 521, 528 (2009) (hereinafter "Dobson Report"). CCM, Vol. I, Appendix.

[81] United States 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*, p. 13 (June 2003) (hereinafter "EPA 2003 Analysis"). EM, Vol. III, Annex 146.

[82] Federal Republic of Germany, Federal Institute of Risk Assessment, *Health Assessment Report POE-tallowamines*, pp. 4, 8, 20, 21 (6 Sep. 2010). ER, Vol. III, Annex 26.

[83] *Ibid.*

[84] Government of Colombia National Health Institute, *Evaluation of Effects of Glyphosate on Human Health in Illicit Crop Eradication Program Influence Zones*, p. 5 (2003). EM, Vol. II, Annex 96.

cancer[85]. These effects were detailed in the *Memorial*[86], but the *Counter-Memorial* completely ignores them.

2.46 Indeed, the high level of POEA in Roundup SL was one of the reasons Colombia switched to GLY-41 in 2005. As the *Counter-Memorial* concedes, Roundup SL was replaced by GLY-41 to "avoid[] the possible effects associated with the use of the POEA surfactant . . . in particular the risk of eye irritation"[87]. Thus, based on this admission alone, the Court can conclude that Colombia used an herbicide with an unacceptably high level of POEA for at least four years while spraying in close proximity to Ecuador[88]. It remains for Colombia to demonstrate that the POEA it used after 2005 is less harmful (if, in fact, it switched to a different and less harmful type of POEA).

2. Additional Chemicals

2.47 POEA is not the only formulant added by Colombia to its glyphosate-based spray mixtures. The scientific reports relied upon by Colombia, including its own expert reports, show that other formulants are also present in the toxic cocktail sprayed along the border with Ecuador. For example, the Solomon

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[85] *Ibid.*; EPA 2003 Analysis, *op. cit.*, p. 13. EM, Vol. III, Annex 146.

[86] EM, Chap. 5, para. 5.18.

[87] CCM, Chap. 4, para. 4.50, n.312.

[88] In fact, the amount of POEA in GLY-41, the formulation that replaced Roundup SL in 2005, is unacceptably high as well.

study, which was prepared at Colombia's request in 2005 and which features prominently in the *Counter-Memorial*, states that: "The glyphosate formulation used in Colombia includes *several formulants*"[89]. However, none of these chemical components of the spray mixture have been identified, other than POEA. Nor are they identified in Colombia's expert report by Dr. Stuart Dobson submitted with the *Counter-Memorial*, despite the fact that the Dobson Report also acknowledges that POEA is not the only added formulant[90]. Specifically, the Dobson Report states that the "formulation uses *predominantly* POEA as its surfactant"[91]. In other words, there are *other* surfactants as well, none of which Colombia has identified, and which are still unknown to Ecuador and the Court.

2.48 Reports by the U.S. government confirm that Colombia has not fully disclosed all the chemicals in the spray mixture. For example, multiple reports by the U.S. EPA state that the spray contains an unnamed ingredient for which "*information [is] not included as it may be entitled to confidential treatment*"[92]. Similarly, the U.S. Department of State reported that the spray contains a

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[89] Solomon et al., 2005, *op. cit.*, p. 23, 24 (emphasis added). CCM, Vol. III, Annex 116.

[90] Dobson Report, *op. cit.*, p. 521. CCM, Vol. I, Appendix.

[91] *Ibid.* (emphasis added).

[92] EPA 2002 Analysis, *op. cit.*, p. 10 (listing the "components of the glyphosate product" to include Polyoxyethylene alkylamine ("POEA") and another unnamed ingredient for which "*information [is] not included as it may be entitled to confidential treatment*"). ER, Vol. III, Annex 45. *See also* EPA 2003 Analysis, *op. cit.*, p. 13. EM, Vol. III, Annex 146.

"surfactant blend"[93]. In other words, POEA is just one of the surfactants in a "blend"; the other ingredients are not disclosed.

2.49 Colombia's persistent refusal to identify the other chemicals in the spray mixture is of serious concern, because these chemicals significantly contribute to the mixture's toxicity, and the consequent risks to humans, animals and plants that are exposed to it. As the Dobson Report explains, "[s]urfactants play the principal role in the environmental toxicity of formulations of glyphosate and the Colombian spray mix; they are probably key in symptoms to humans"[94]. This is confirmed by the 2005 Solomon study, which states that "it is the surfactants that determine the toxicity of the formulation", and by the U.S. EPA, which explains that "formulations of glyphosate products that EPA has registered" are "more toxic than glyphosate alone"[95].

2.50 Yet Colombia has thus far refused to identify all of the formulants it uses in the spray mixture. Not even its own experts appear to know what they are, although they know enough to state that whatever is used is more toxic than the

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[93] United States Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Chemicals Used in the Aerial Eradication of Illicit Coca in Colombia and Conditions of Application*, p. 1 (Sep. 2002) (hereinafter "Chemicals Used"). EM, Vol. III, Annex 144.

[94] Dobson Report, *op. cit.*, p. 546. CCM, Vol. I, Appendix.

[95] Solomon et al., 2005, *op. cit.*, p. 93. EM, Vol. III, Annex 151; EPA 2002 Analysis, *op. cit.*, p. 32. ER, Vol. III, Annex 45; *see also* EM, Chaps. 2 and 5, paras. 2.41, 5.16-5.18; Weller Report, *op. cit.*, pp. 7-8. ER, Vol. II, Annex 3.

glyphosate itself[96]. Nevertheless, as if Colombia failed to read what its experts wrote – or chose to ignore them – the *Counter-Memorial* brazenly represents that the chemical composition of the spray mixture is "a matter of public knowledge"[97].

3. Cosmo-Flux 411F

2.51 The *Counter-Memorial* states that Colombia adds an adjuvant known as Cosmo-Flux 411F ("Cosmo-Flux") to the glyphosate-based spray mixtures that it admits using, *i.e.*, Roundup SL and GLY-41[98]. The *Counter-Memorial* then falsely asserts that the chemical composition of Cosmo-Flux is known and non-toxic.

2.52 Colombia has never revealed the composition of Cosmo-Flux, a mixture of chemicals that is only produced and used in Colombia. (As Ecuador noted in the *Memorial*, and as Colombia did not dispute in the *Counter-Memorial*, a British chemical manufacturer refused to provide Colombia with the chemicals

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[96] Dobson Report, *op. cit.*, p. 546. CCM, Vol. I, Appendix; *see also* Solomon et al., 2005, *op. cit.*, p. 93. EM, Vol. III, Annex 151.

[97] CCM, Chap. 5, para. 5.96; *see also* CCM, Chaps. 4, 6 and 8, paras. 4.45, 6.36, 8.60.

[98] *Ibid.*, Chap. 4, paras. 4.51-4.56. According to the Solomon Report (2005), an "adjuvant" is a chemical added to the formulated product at the time of application to increase efficacy and ease of use. Solomon et al., 2005, *op. cit.*, p. 23. EM, Vol. III, Annex 151.

used to produce Cosmo-Flux, explaining that the spray mixture "had not properly been tested" for use in aerial spraying[99].).

2.53 The specific ingredients contained in Cosmo-Flux are labelled "confidential" in reports by the U.S. government. For example, a 2002 report by the U.S. EPA states:

> "The **Cosmo-Flux 411F** adjuvant used in the glyphosate tank mix is produced by a Colombian company and is not sold in the U.S. . . . Cosmo-Flux 411F consists mainly of *(information not included as it may be entitled to confidential treatment)* with a non-ionic surfactant blend primarily composed of *(information not included as it may be entitled to confidential treatment)*"[100].

2.54 The secret nature of Cosmo-Flux is alluded to in the 2005 Solomon study, which states only that the active ingredient in Cosmo-Flux is a "mixture" containing certain "linear and aryl polyethoxylates". But it does not provide any details about the "mixture"[101].

2.55 Although Colombia's failure to disclose the chemical composition of Cosmo-Flux makes it impossible for Ecuador (or the Court) to evaluate the full extent of its toxicity, there is no doubt that Cosmo-Flux makes the spray mixture more toxic. To be sure, the *Counter-Memorial* blithely claims that Cosmo-Flux

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[99] EM, Chap. 5, para. 5.24.

[100] EPA 2002 Analysis, *op. cit.*, p. 7 (emphasis in original). ER, Vol. III, Annex 45; *see also* EPA 2003 Analysis, *op. cit.*, p. 14. EM, Vol. III, Annex 146.

[101] Solomon et al., 2005, *op. cit.*, p. 24. EM, Vol. III, Annex 151.

"does not increase the toxicity of the mixture"[102]. That assertion is impossible to reconcile with the 2005 Solomon study, however, which concludes that "the toxicity of the mixture of glyphosate and Cosmo-Flux" is "greater than that reported for formulated glyphosate itself"[103]. How much more toxic, we cannot know – until Colombia reveals the chemical composition of Cosmo-Flux. What we can – and do – know, is that, based on Colombia's own expert reports, its statement that Cosmo-Flux "does not increase the toxicity of the mixture" is another misrepresentation.

2.56 Indeed, Colombia uses Cosmo-Flux precisely because of its ability to enhance the killing power of glyphosate[104]. As Colombia's expert, Dr. Dobson, has admitted, "the addition of extra surfactant Cosmo-Flux . . . increases the potency of the glyphosate formulation to coca plants fourfold" and that "plants other than coca" will also be "more susceptible to the herbicide spray enhanced with the adjuvant"[105]. Cosmo-Flux's Colombian manufacturer also acknowledges that the product "substantially modifies the biological activity of

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[102] CCM, Chap. 4, para. 4.53.

[103] Solomon et al., 2005, *op. cit.*, p. 86. EM, Vol. III, Annex 151; *see also ibid.*, p. 69.

[104] Ronald T. Collins & Charles S. Helling, *Surfactant-Enhanced Control of Two Erythroxylum Species by Glyphosate*, Weed Technology, Vol. 16, p. 851 (2002) (identifying adjuvants that increased glyphosate phytotoxicity fourfold and explaining that "[i]n consequence, the glyphosate mixture used in Colombia for coca eradication was modified with substantially improved results"). EM, Vol. III, Annex 141; CCM, Chap. 4, para. 4.53 (noting that Cosmo-Flux was selected as a result of research by Collins and Helling); *see also* Chemicals Used, *op. cit.*, p. 1. EM, Vol. III, Annex 144.

[105] Dobson Report, *op. cit.*, p. 538. CCM, Vol. I, Appendix.

agrochemicals"[106]. Thus, Colombia's denial that Cosmo-Flux makes the spray mixture more toxic cannot be believed[107].

4. Colombia's Assertion That "No Other Ingredients" Have Been Used

2.57 Notwithstanding the *Counter-Memorial*'s assertion to the contrary[108], Cosmo-Flux is not the only chemical that is added to the glyphosate-POEA mixture. The *Counter-Memorial*'s claim is "supported" by the Colombian National Police's Anti-Narcotics Directorate, in a report dated 8 February 2010, which appears to have been prepared for the present case. The report states without exception that "*no other ingredients have been used in the program*"[109]. Once again, the falsity of Colombia's statements is exposed by the evidence, including official reports of the U.S. government and Colombia's diplomatic communications to Ecuador.

2.58 To cite a few examples, in its 14 July 2001 diplomatic note to Ecuador, Colombia stated that the spray mixture contains **dioxin**[110], a chemical associated with significant human health problems, including reproductive and

[106] Cosmoagro, S.A., *Cosmo-Flux 411F*. EM, Vol. III, Annex 112.

[107] As explained in Ecuador's *Memorial*, Cosmo-Flux also poses risks to human health. *See* EM, Chap. 5, para. 5.22.

[108] CCM, Chap. 4, para. 4.42-4.56.

[109] DIRAN Report, *op. cit.*, p. 307 (emphasis added). CCM, Vol. II, Annex 67.

[110] CCM, Chap. 6, para. 6.15, quoting Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador (14 July 2001). EM, Vol. II, Annex 42.

developmental problems, damage to the immune system, interference with hormones, and cancer; dioxin is also a long-lasting environmental contaminant[111].

2.59 The following year, at a meeting from 13 to 15 February 2002, Colombia informed Ecuador that the spray mixture also contains **1,4 Dioxane**[112]. Colombia has acknowledged that this chemical is "demonstrated to have a carcinogenic capability in animals and to cause harm to human livers and kidneys"[113]. According to the World Health Organization, 1,4 Dioxane has genotoxic potential and is regulated as a drinking water contaminant[114].

2.60 Ecuador's *Memorial* noted that the U.S. Department of Agriculture (USDA), which was tasked with evaluating the aerial spraying programme, stated in 2001 (that is, over a year after the spraying began alongside Ecuador) that the spray mixture contains **formaldehyde**. Because this substance poses significant

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[111] United Nations World Health Organization, Dioxins and Their Effects on Human Health, *available at* http://www.who.int/mediacentre/factsheets/fs225/en/index.html (last visited 14 Jan. 2011).

[112] Republic of Ecuador, Ministry of Environment, *Joint Report from the Workshop: Eradication of Illicit Crops, Bogotá, Colombia*, p. 10, para. 14 (13-15 Feb. 2002). EM, Vol. IV, Annex 163. *See also* Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 5 (23 Dec. 1999). ER, Vol. V, Annex 132.

[113] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 16 (23 Dec. 1999). ER, Vol. V, Annex 132.

[114] United Nations World Health Organization, Guidelines for Drinking Water Quality, § 12,54(a) 1,4 Dioxane, *available at* http://www.who.int/water_sanitation_health/dwq/chemicals/gdwq366_366a.pdf (last visited 2 Dec. 2010).

human health risks, the USDA recommended that Colombia cease using it[115]. In the *Counter-Memorial*, Colombia does not attempt to explain the USDA's statement that formaldehyde is or was included in the spray mixture. Indeed, Colombia's Dobson Report confirms that an unnamed "preservative" is "added" to the spray mixture and notes that "[p]reservatives may also play a significant role in specific effects on humans"[116]. Although the Dobson Report does not identify this "preservative", it observes that it could be "formaldehyde"[117]. Colombia is so secretive about what it puts into its spray mixture that even its own experts, hired to provide scientific support for the aerial spraying programme, are left to guess about some of the ingredients.

2.61 In addition to dioxin, 1,4 Dioxane and formaldehyde, there is evidence that other chemicals are added as well. In that regard, the U.S. Government's Congressional Research Service reported, based on statements by the U.S. Department of State, that the spray includes an "anti-foaming additive" called **COSMO IN D**[118]. This is especially troubling because the Colombian Ministry of Health describes COSMO IN D as "extremely toxic due to its severe eye

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[115] EM, Chap. 5, para. 5.28.

[116] Dobson Report, *op. cit.*, pp. 521, 546. CCM, Vol. I, Appendix.

[117] *Ibid.*

[118] United States Congressional Research Service, *Andean Regional Initiative (ARI): FY2002 Assistance for Colombia and Neighbors*, p. 25 (14 Dec. 2001). ER, Vol. III, Annex 43.

irritation effects"[119]. To the same effect, a separate report by the USDA states that Colombia includes a "second additive to minimize foaming of the spray tank". The report does not identify this anti-foaming agent[120].

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2.62 In sum, the *Counter-Memorial* misrepresents both the contents of Colombia's aerial spray mixture, and its toxicity to humans, animals, plants and the environment. Colombia's assertion that the chemical contents of the spray mixture are "publicly known" would be laughable, if it were not for the dangerously high level of toxicity of the mixture and the serious risks of harm it poses (and has caused) to people, animals, plants and the environment in Ecuador. Colombia's own description of the mixture's contents, and resulting toxicity, bears scant resemblance to the truth.

2.63 As shown, Colombia sprayed Roundup Export, a highly toxic herbicide formulation that the U.S. EPA determined had to be discontinued given its propensity to cause permanent eye damage. During the same time period that Roundup Export was used, Colombia represented to Ecuador that it was using another product, Roundup Ultra, which it likewise fails to mention in the

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[119] Toxicological Opinion Nº 0685, regarding the toxicological classification of the mix Glyphosate + POEA + Cosmo-Flux (1%), Colombian Health Ministry, 8 Oct. 2001. CCM, Vol. II, Annex 44.

[120] Charles S. Helling & Mary J. Camp, United States Department of Agriculture, *Verifying Coca Eradication Effectiveness in Colombia*, pp. 10-11 (date unknown). EM, Vol. III, Annex 160.

Counter-Memorial, and which is also highly toxic. The products that Colombia admits to using – Roundup SL and GLY-41 – are no better: among other safety directives, their labels expressly warn that these products cause eye irritation and instruct against allowing inhalation or contact with human skin. Worse yet, the spray mixture contains other dangerous chemicals, including POEA and Cosmo-Flux, as well as others that the *Counter-Memorial* fails to acknowledge, including unidentified anti-foaming agents and preservatives. All of these chemicals are widely recognized as harmful to human health and the environment, including by Colombia's own experts.

2.64 The following section addresses the reckless and irresponsible manner in which Colombia has sprayed this secret and highly toxic chemical stew – including on people, animals, plants, forests and water bodies in Ecuador.

Section II. Colombia's Misrepresentations Regarding Spraying Operations

2.65 The *Counter-Memorial* relies heavily on the alleged rigor with which Colombia supposedly enforces the spray programme's operational parameters. Colombia claims that, by its full and faithful compliance with these requirements – which strictly regulate the manner in which spraying operations are allegedly conducted, including flight speed, altitude, spray application rate, droplet size, time of day, and other parameters – it prevents any spray from reaching Ecuador,

making it impossible for Ecuador to have been harmed by the aerial spraying programme. Apart from denying the capacity of the spray itself to cause harm (as addressed in the previous section), Colombia's defense in this case rests on its argument that spraying operations are conducted in a scrupulously careful manner that precludes any possibility that the spray mixture reaches across the border into Ecuador or affects people, animals, plants or the environment there. In one of the many places where Colombia makes this argument, paragraph 4.69 states that Colombia "set minimum and maximum figures in the Environmental Management Plan for the parameters upon which drift is contingent, with the purpose of reducing it as much as possible. These parameters are *strictly observed* by the personnel involved in spraying operations"[121]. Based on Colombia's purportedly rigorous compliance with these "strict technical parameters" and the resultant reduced drift, the *Counter-Memorial* concludes that "no damage could have occurred in Ecuadorian territory"[122].

2.66 For this self-serving conclusion, Colombia relies on a report from its very own National Narcotics Directorate ("DNE"), dated 4 February 2010, that was obviously prepared for this litigation. This "unbiased" report claims the aerial spraying is a "highly technical program that is carried out pursuant to the strictest parameters in order to ensure that its implementation poses no risks to human

[121] CCM, Chap. 4, para. 4.69 (emphasis added); *see also* CCM, Chap. 7, para. 7.17.

[122] *Ibid.*, Chap. 7, para. 7.5.

health or the environment"[123]. It assures that the programme "complies with all the environmental parameters set out for its implementation and to assess impacts on the environment, human health and farming activities"[124]. Unsurprisingly, a similar for-purposes-of-litigation report (also dated 4 February 2010) has been provided by Colombia's equally "unbiased" Anti-Narcotics Direction of the Colombian National Police ("DIRAN"). This report, too, declares that "the operational parameters foreseen in the Environmental Management Plan, such as flight altitude, maximum wind speed and herbicide dosage, are *fully observed*"[125].

2.67 The adequacy of Colombia's "Environmental Management Plan" ("EMP") and its "technical parameters" for preventing spray drift and avoiding harm in Ecuador are addressed in Chapter 4. In *that* Chapter, Ecuador shows, *inter alia*, that Colombia's EMP, upon which so much of its argument stands, was prepared without the benefit of an environmental impact assessment, violates Colombia's own environmental laws, and sets standards for controlling drift in aerial spraying operations that are far more permissive than those in the rest of the world. In *this* Chapter, Ecuador shows that, notwithstanding the self-serving reports recently prepared by the anti-narcotics agencies responsible for execution

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[123] Report by the National Narcotics Directorate (DNE), 4 Feb. 2010. CCM, Vol. II, Annex 66. *See also ibid.* ("The program is implemented in compliance with the legislation in force and with standardized protocols and procedures; therefore, it is carried out exactly the same way regarding operational parameters, dose and ingredients in the spray mixture, etc. All over the national territory where illicit crops are detected, including the border zone with Ecuador".).

[124] *Ibid.*, Appendix.

[125] DIRAN Report, *op. cit.*, para. 2.2.3 (emphasis added). CCM, Vol. II, Annex 67.

of the aerial spraying programme, Colombia failed to meet even the excessively low standards set in the EMP for carrying out its aerial spraying operations: data contemporaneously recorded by the spray planes themselves show that literally on tens of thousands of flights along or near the Ecuadorian border the pilots employed by Colombia recklessly and by a wide margin violated all of the conditions required by the EMP to prevent spray drift, virtually assuring that it would reach into Ecuador.

2.68 The Parties are in agreement on the factors that, if not adequately controlled, cause aerial spray to drift, including over long distances. These factors are, among others, the speed of the aircraft; the altitude at which the spray is released; the spray application rate (in litres per hectare); the size of the spray droplets; the time of day; and meteorological conditions, including wind speed and direction, temperature and humidity. Ecuador agrees with Colombia that:

> "spray drift depends essentially on wind speed and direction, as well as on a number of other atmospheric factors including temperature, relative humidity and atmospheric stability. It is also dependent on the altitude at which spraying takes place and the air speed of the spraying aircraft, as well as the calibration of the spraying equipment, the density of the spray mix and the initial size of the spray droplets"[126].

2.69 The *Counter-Memorial* asserts that Colombia has taken all of these factors into account and has adopted strict regulations in regard to each factor.

[126] CCM, Chap. 7, para. 7.17.

According to Colombia, there are "strict parameters" that set the "minimum and maximum figures" for each factor affecting "drift", including those regulating "aircraft speed, height", "wind speed" and "temperature"[127]. The *Counter-Memorial* also claims that Colombia enforces operational limits for application rate and droplet size, as well as a prohibition on spraying at night, when temperature and other climatic conditions are more conducive to spray drift[128]. At paragraph 4.34, Colombia calls the EMP, which contains the operational parameters for the programme, a "set of rules and procedures that *must be followed and observed*"[129].

2.70 Paragraph 4.74 of the *Counter-Memorial* reaffirms the mandatory nature of the operational parameters set forth in the EMP, and specifically acknowledges that they are necessary to ensure the protection of people, plants and animals *in Ecuador*; Colombia states that it:

> "enacted rules and standards governing the aerial spraying program in order to ensure that standards relating to the protection of human health and the environment were consistently followed and applied throughout its territory. When aerial spraying operations started in the zone near the border with Ecuador, the same rules were applied with no modifications. These rules were

[127] *Ibid.*, Chaps. 7 and 8, paras. 7.32, 8.60.

[128] *Ibid.*, Chaps. 4 and 7, paras. 4.62, 7.27; Resolution Nº1054 of 30 September 2003 of the Ministry for the Environment of Colombia, p. 173. CCM, Vol. II, Annex 50.

[129] CCM, Chap. 4, para. 4.23 (referencing Environmental Management Plan in Resolution Nº 1054). Resolution Nº 1054 of 30 September 2003 of the Ministry for the Environment of Colombia. CCM, Vol. II, Annex 50.

embodied in the Environmental Management Plan that governs eradication program up to the present time"[130].

2.71 The *Counter-Memorial* claims that Colombia has not only promulgated restrictions on the relevant operational parameters, but that it has strictly enforced them as well. It claims to have rigorously monitored the spray programme to assure that all flights are in compliance with the requirements of the EMP in all respects[131]. It claims to have regularly analysed the fight data automatically generated by the spray planes (the same data subsequently obtained by Ecuador and submitted with this *Reply*), and to have prepared quarterly and semi-annual reports assessing compliance with all operational parameters[132]. Although no such reports are presented to the Court with the *Counter-Memorial*, Colombia avers that every such report confirms that the aerial spraying has been conducted in strict compliance with the requirements of the EMP. It admits to no deviations from these standards; nor does it concede that any violations have occurred. Paragraph 4.69 in the *Counter-Memorial* asserts that "*[t]hese parameters are strictly observed by the personnel involved in spraying operations*"[133].

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[130] CCM, Chap. 4, para. 4.74.

[131] *See infra* Chap. 2, paras. 2.75-2.80.

[132] *Ibid.*, Chap. 2, paras. 2.81-2.82.

[133] CCM, Chap. 4, para. 4.69 (emphasis added). *See also ibid.*, Chap. 7, para. 7.17 ("The PECIG's Environmental Management Plan has taken into account all these factors and set minimum and maximum figures for the parameters upon which drift is contingent, with the purpose of reducing it as much as possible . . . . These parameters are strictly observed by the personnel involved in spraying operations".).

2.72 As shown below, these representations by Colombia about its execution of the aerial spraying programme are impossible to reconcile with the flight data recorded by the spray planes themselves, which were furnished not only to Colombia but also to the U. S. Department of State by the private U.S. company that conducts the spray flights on behalf of Colombia (with financing from the U.S. government). As indicated previously, it is from the U.S. Department of State that Ecuador obtained all of the raw data generated by the spray planes during flight[134]. They show unequivocally that Colombia has grossly misrepresented the facts concerning the conduct of the spray programme. Indeed, the *Counter-Memorial* is wrong in all material respects concerning the spray flights, including especially whether they have complied with the requirements to prevent spray drift, such as: maximum flight speed; maximum altitude for dispersion of spray; maximum application rate; minimum droplet size; and prohibition of night time spraying. Failure to comply with any *one* of these requirements increases the potential for spray to reach Ecuador and cause harm there. But, contrary to the representations in the *Counter-Memorial,* the evidence shows that Colombia has failed to comply with *all* of them – on literally tens of thousands of spray flights along or near the border with Ecuador.

[134] *Supra* Chap. 2, para. 2.7.

2.73 Specifically, the evidence – described in more detail in the following pages – shows that, in regard to spray flights within 10 kilometres of border with Ecuador between 2000 and 2008, there were:

- At least **75,841** flights when spray was dispersed at speeds higher than the 165 mile per hour ("mph") limit asserted in Colombia's *Counter-Memorial*.
- At least **16,143** flights when spray was dispersed at altitudes higher than the 50 metre limit set in the EMP.
- At least **27,429** flights when the spray application rate was above the 23.65 litre per hectare limit allowed by the EMP.
- At least **24,540** flights at night, contrary to the *Counter-Memorial*'s claim that spraying only occurs during the daytime.

A. THE *COUNTER-MEMORIAL*'S CLAIMS REGARDING COLOMBIA'S COMPLIANCE WITH OPERATIONAL REQUIREMENTS TO PREVENT SPRAY DRIFT

2.74 Colombia states in the *Counter-Memorial* that the "extent" of "spray drift" is a "central issue" in this case[135]. Ecuador agrees: the measures that Colombia has, or as the case may be, has not, taken to minimize spray drift are fundamental to assessing Colombia's international responsibility.

2.75 Colombia gives itself high marks for the prudence with which it claims to have conducted the aerial spraying. For example, it avers that it has always taken

[135] CCM, Chap. 7, para. 7.16.

"every care" to "ensure that spraying occurs only on Colombian territory" and that, as a result, no harm could be caused to Ecuador as a result of spray drift[136].

2.76 Colombia claims that it ensures against spray drift by strict compliance with the operational requirements boasted of in the *Counter-Memorial* and set forth in its EMP. Colombia fastens its sail in this case to the mast of these requirements. Colombia's compliance with them, according to the *Counter-Memorial*, negates the possibility of spray drift into Ecuador. Colombia even considers itself legally bound, under Colombia law, to comply with them. Resolution 1054 of Colombia's Ministry for the Environment, which approved the EMP, describes it as having the same legal status as "environmental regulations":

> "Each and every activity and component of this program should be set with within the context of current environmental regulations so that constitutional assumptions can be complied with, which impose a duty on the State to protect environmental diversity and integrity, preserve areas of special ecological importance, and stimulate education so that these goals may be attained"[137].

2.77 Colombia has long claimed that the safety of the aerial spraying programme, including the prevention of drift, depends on strict compliance with

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[136] *Ibid.*, Chap. 7, paras. 7.5, 7.16.

[137] Resolution Nº 1054 of 30 September 2003 of the Ministry for the Environment of Colombia. CCM, Vol. II, Annex 50. *See also* Claudia Rojas Quiñonez, Esq., *The Aerial Spray Program and Violations of Colombia's Domestic Laws Regarding the Environment and the Rights of Indigenous Peoples*, paras. 15-17, 39, 78, 84, 89-90, and 124 (Jan. 2011) (discussing Colombia's legal obligation to comply with the spray programme's Environmental Management Plan). ER, Vol. II, Annex 8.

the operational requirements/regulations. As early as 1993, the Colombian Health Minister informed the Director of Colombia's DNE of the critical importance of complying with the spraying programme's operational parameters[138]. This view was repeated by the General Manager of Colombia's National Institute for Renewable Natural Resources and the Environment, who emphasized the "importance that must be given to compliance with the specific and technical parameters"[139].

2.78 Colombia's Agriculture Institute, which is charged with the regulation of the chemicals in the spray mixture, reiterated the need to comply with the operational parameters in January 2003, in correspondence with the Director of Colombia's DNE. The Director was reminded that "in carrying out these sprayings all technical measures continue to be applied regarding nozzles calibration, proper mixture preparation" and that "[t]hese sprayings shall be carried out in accordance with environmental parameters for this type of spraying"[140].

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[138] Note from the Colombian Health Minister to the Director of the National Narcotics Directorate, 11 Oct. 1993 (stating that operational parameters "must be kept"). CCM, Vol. II, Annex 36.

[139] Resolution No. 001 of 11 February 1994 of National Narcotics Council of Colombia. CCM, Vol. II, Annex 37.

[140] Note No. 00500 from the Assistant Manager for Agricultural Protection and Regulation of the Colombian Agriculture and Livestock Institute to the Director of the National Narcotics Directorate, 28 Jan. 2003. CCM, Vol. II, Annex 47.

2.79 The highest administrative tribunal in Colombia, the Council of State, issued an order in 2004 requiring the Colombian authorities to observe strict compliance with the requirements of the EMP in carrying out the aerial spraying programme, as well as the resolutions of the Ministry of the Environment regarding the programme, allowing "not even the slightest deviation":

> "the guidelines stated by the environmental authorities should be followed when illicit crops are being sprayed, and *not even the slightest deviation from these should be permitted*, which means that it is therefore necessary for permanent controls to be undertaken, with continuous evaluations, of any effects which might begin to appear"[141].

2.80 The *Counter-Memorial* describes the monitoring programme Colombia has put in place to assure that all aerial spraying is carried out in strict accordance with the operational requirements of the EMP, as ordered by the Council of State. The monitoring programme includes elaborate and sophisticated data collection techniques for obtaining the data from each and every flight pertaining to the operational requirements. Paragraph 7.172 of the *Counter-Memorial* states that:

> "All spray aircraft are equipped with a satellite monitoring system which guarantees the accuracy of the operations and ensures that the sprayings are carried out on the areas targeted. Wind conditions are constantly monitored by the aircraft and if they are not within the parameters allowed, the mission is annulled or postponed. Each operation is recorded in detail, including the place, hour, number of hectares sprayed, spraying locations, etc.

[141] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca (19 Oct. 2004) (emphasis added). ER, Vol. V, Annex 151.

> The amount of products used in the operation (glyphosate and adjuvant) is also stated in the operational records"[142].

According to Colombia, spray events are further documented in detailed post-operational reporting:

> "Once daily spraying operations are finished, a detailed report of the day's operations is prepared on the basis of the computerized system which records each spraying operation with its respective route, geo-referenced areas of application and the amount of spray mix released per minute. This allows verification of the location of the places where the operations took place and quantification of the hectares sprayed. A record is signed by the Base Commander and the personnel involved in the operation"[143].

2.81 The *Counter-Memorial* describes how the data collected by these means are reported, reviewed and analyzed. It says, for example, at paragraph 4.26 that the "Ministry for the Environment oversees the implementation of the EMP and verifies compliance with the guidelines and duties foreseen in it", and that "[t]wo reports per year are submitted to the Ministry, which may issue rulings on the activities carried out by the agencies involved in the implementation of the [aerial spraying] programme"[144]. Further, according to the *Counter-Memorial*, the data regarding the spray programme are reviewed by "an external technical audit, contracted yearly through public tender with resources provided by the National Narcotics Council" that "submits quarterly reports of its evaluations and

[142] CCM, Chap. 7, para. 7.172.

[143] *Ibid.*, Chap. 4, para. 4.64.

[144] *Ibid.*, Chap. 4, para. 4.26.

assessments, with recommendations for any outstanding corrective actions to be taken"[145].

2.82 Notably, Colombia did not provide the Court with any of the data regarding the execution of the aerial spray programme that the *Counter-Memorial* says has been recorded. Nor did Colombia submit to the Court any of the evaluative reports or audits that it claims the data have been subjected to (*i.e.*, the twice-yearly reports to the Ministry of the Environment, or the quarterly reports of the technical auditors contracted by the National Narcotics Council). These are conspicuous omissions. Colombia, in essence, asks the Court to take it on faith that the aerial spraying programme has been consistently carried out along the border with Ecuador since 2000 in strict compliance with the operational requirements of the EMP, and that the data collected about the spray flights and the evaluative reports all confirm this. Where are these data and reports? The Court's case law has made clear that a State's failure to present records in its possession to substantiate factual claims, particularly when they relate to alleged compliance with legal requirements, warrants a cautious approach to these claims since "[a] public authority is generally able to demonstrate that it has followed the appropriate procedures and applied the guarantees required by law – if such was

[145] *Ibid.*, Chap. 4, paras. 4.28-4.29. *See also ibid.*, para. 4.74 ("the program is overseen by a permanent external audit").

the case – by producing documentary evidence of the actions that were carried out"[146].

B. ECUADOR'S RECEIPT OF DATA FROM THE GOVERNMENT OF THE UNITED STATES REGARDING COLOMBIA'S AERIAL SPRAYING PROGRAMME

2.83 Just as Colombia failed to provide the Court with the data recorded by its spray planes, or with its quarterly and semi-annual reports on compliance with the operational requirements of the EMP, it also refused to provide the information and documents to Ecuador, despite repeated requests over several years[147]. Colombia's persistent refusals led Ecuador to look elsewhere for the data on the spray flights. Ecuador turned to the only other known source for these data: the U.S. Department of State. It is public knowledge that the United States provides financial and operational support for Colombia's aerial spraying programme, including the purchase of chemicals and aircraft, and by contracting with DynCorp International LLC to provide the pilots and ground personnel to carry out the spray missions and service the equipment[148]. As part of its cooperation with Colombia, the State Department receives the data recorded by the spray planes. A State Department Report from 2002 explains:

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[146] *Case Concerning Ahmadou Sadio Diallo (Republic of Guinea v. Democratic Republic of the Congo), Judgment, I.C.J. Reports 2010*, p. 24, para. 65.

[147] *See e.g.*, EM, Chap. 3, paras. 3.1-3.3, 3.9, 3.17, 3.21, 3.28-3.30.

[148] *See* CCM, Chap. 1, para. 1.35, 4.63; DIRAN Report, *op. cit.*, p. 301. CCM, Vol. II, Annex 67.

> "Onboard computer and digital global positioning systems (D/GPS)-driven equipment (SATLOC and Del Norte) automatically record each aircraft's actual flight parameters, including differential-GPS track, airspeed, altitude (mean sea level), application rate, and precise geographic location (longitude and latitude coordinates) at the time of aspersion"[149].

2.84 In a formal request under the U.S. Freedom of Information Act[150] made on 3 April 2009, Ecuador sought from the U.S. Department of State "records of aircraft flight parameters recorded during missions to eradicate illicit coca in Colombia" for "aerial spraying operations conducted in the Putumayo and Nariño Departments of Colombia within 20 kilometres of the international border with Ecuador"[151]. In a response dated 13 November 2009, the Department of State provided 11 documents from its International Narcotics and Law Enforcement Affairs Bureau (a set of ten maps depicting the location of spray events between 2000 and 2008, and a set of screen shots from the data recording system), and a computer disk containing "the detailed underlying data to the documents"[152]. In response to a follow-up request[153], on 12 March 2010 the U.S. Department of

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[149] Chemicals Used, *op. cit.*, p. 3. EM, Vol. III, Annex 144.

[150] United States, Freedom of Information Act, 55 U.S.C. § 552.

[151] Letter from Rebecca L. Puskas, Counsel to Government of Ecuador to United States Department of State Office of Information Programs and Services (3 Apr. 2009). ER, Vol. IV, Annex 113.

[152] Letter from Margaret P. Grafeld, Director, Office of Information Programs and Services, United States Department of State to Rebecca L. Puskas, Counsel to Government of Ecuador (13 Nov. 2009). ER, Vol. IV, Annex 114. A copy of the data CD obtained by Ecuador from the U.S. Department of State has been deposited with the Registry.

[153] Letter from Rebecca L. Puskas, Counsel to Government of Ecuador to A. Harold (Hal) Eisner, United States Department of State Office of Information Programs and Services (19 Feb. 2010). ER, Vol. IV, Annex 115.

State provided a description of each parameter reflected in the flight data and the units associated with the data[154].

2.85 The data that Ecuador received from the U.S. Department of State provide information about 247,977 spray events within 20 kilometres of Ecuador that were flown between 2000 and 2008, 114,525 of which occurred within 10 kilometres of Ecuador[155]. During this time, Colombia's spray planes deposited a total of 326,658 gallons (1,236,535 litres) of the toxic herbicide spray mixture within 10 kilometres of Ecuador's border[156].

2.86 In light of the *Counter-Memorial*'s failure to present any information about the location and conditions of aerial spraying near Ecuador's border, it falls to Ecuador to bring this evidence to the Court's attention. As discussed below, the data make a mockery of Colombia's assertions about the prudence with which it allegedly conducts the aerial spraying programme, and the supposed "strict compliance" with the operational requirements of the EMP. As recorded by the

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[154] Fax from A. Harold Eisner, Office of Information Programs and Services, United States Department of State to Rebecca L. Puskas, Counsel to Government of Ecuador (12 Mar. 2010). ER, Vol. IV, Annex 116.

[155] R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008*, p. 11 (Jan. 2011) (hereinafter "Hansman & Mena Report"). ER, Vol. II, Annex 1. Ecuador received information regarding flight paths located within 20 kilometres of the international border but has focused its analysis on the flight paths within 10 kilometres of the frontier. *Ibid.* As discussed in the Hansman & Mena Report, the records represent aircraft ground tracks when chemicals were being sprayed. *Ibid.*, p. 6. Ecuador has not obtained information regarding the flight paths of Colombia's spray planes when the chemicals were not being sprayed.

[156] Hansman & Mena Report, *op. cit.*, p. 11. ER, Vol. II, Annex 1.

spray planes, the data thoroughly contradict the representations about the aerial spraying programme provided in the *Counter-Memorial*, especially in relation to Colombia's alleged compliance with the operational requirements in regard to flight speed, altitude of spray release, application rate, droplet size, time of day, and other pertinent factors that affect spray drift, including type of spray planes used, competence of pilots, and avoidance of no-spray zones and buffer zones intended to protect Ecuador and sensitive areas. In sum, what the data show are pervasive violations of every requirement designed to prevent spray drift.

C. AIRCRAFT SPEED AND HEIGHT OF SPRAY RELEASE

2.87 Among the most important factors that influence spray drift are the speed the aircraft is travelling and the height at which the spray is released. The Parties agree that the faster a plane is travelling, and the higher a spray mixture is released, the more likely it is to drift long distances.

1. Speed

2.88 Ecuador and Colombia agree that aircraft speed is a principal factor that determines whether there will be long-distance drift. In that regard, Colombia

acknowledges in paragraph 4.68 of the *Counter-Memorial* that "drift depends" on the "air speed of the spraying aircraft"[157].

2.89 Colombia further asserts in the *Counter-Memorial* that to prevent long-range drift, its planes are forbidden from spraying while travelling in excess of 165 miles per hour (265 km/hr). For instance, Colombia states at paragraph 7.32 that its spray planes fly at a "maximum operation speed of 165 miles per hour"[158].

2.90 In its submission to the Inter-American Commission on Human Rights (IACHR), Colombia claimed an even more restrictive speed limit, informing the Commission that its aircraft are barred from flying faster than 140 mph (225 km/hr)[159].

2.91 Colombia's representations – that its spray planes never fly faster than 165 mph (as it asserts in the *Counter-Memorial*), or 140 mph (as it claimed to the IACHR) – are false. In fact, Colombia's aircraft routinely exceed these speed limits by huge margins. This is confirmed, for example, in the testimony of a pilot with extensive experience flying spray missions for Colombia, who testified

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[157] CCM, Chap. 4, para. 4.68. *See also ibid.*, Chap. 7, para. 7.17.

[158] CCM, Chap. 7, para. 7.32.

[159] Diplomatic Note No. DDH 58003 from the Colombian Foreign Ministry to the Executive Secretary of the Inter-American Commission on Human Rights, 18 Sept. 2005, p. 26. ER, Vol. V, Annex 154.

that the aircraft travel "hundreds of miles per hour"[160]. And it is corroborated by reports authored by the U.S. Department of State that evaluate the aerial spraying programme, which repeatedly criticize the "pilots" for "flying too fast" on "spray passes"[161] and "faster than prescribed airspeeds"[162].

2.92 The State Department's observation that the pilots fly "too fast" is well warranted. Colombia's aircraft routinely spray near the border with Ecuador while flying much faster than 165 mph (the limit asserted in the *Counter-Memorial*), let alone 140 mph (the limit that Colombia represented to the IACHR).

2.93 In fact, according to the spray operation data, Colombia's planes sprayed toxic herbicides within 10 kilometres of the Ecuadorian border while travelling faster than 165 mph on at least **75,841** occasions between 2000 and 2008[163]. That is over **69 percent** of all spray flights in the region[164]. The pervasive violations of the speed limit near the border are illustrated in **Figure 2.4**, which depicts

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[160] United States District Court of the District of Colombia, *Arias, et al. v. Dyncorp, et al., Quinteros, et al. v. Dyncorp, et al.*, Declaration of Redacted Witness (2 June 2010). ER, Vol. IV, Annex 117.

[161] Memorandum from Tim Doty, COR, INL/RM/AS to Dyncorp, PSD Manager, p. 3 (28 May 1997). ER, Vol. III, Annex 37.

[162] United States Department of State, Evaluation Summary Technical Operations (Undated). ER, Vol. III, Annex 50.

[163] Hansman & Mena Report, *op. cit.*, p. 20. ER, Vol. II, Annex 1.

[164] *Ibid.*

violations along Ecuador's Sucumbíos Province. Indeed, in 2002 alone, Colombia's planes sprayed while travelling faster than 165 mph no fewer than 19,594 times[165]. In 2006, they did so 12,855 times[166].

2.94 Colombia's violations of the 140 mph speed limit represented to the IACHR were, of course, even worse. In fact, 108,563 flights – 98 percent of all flights within 10 kilometres of Ecuador's border between 2000 and 2008 – exceeded 140 mph[167]. When Colombia made that claim in September 2005, it had already violated the limit over 75,000 times[168].

2.95 Nor were Colombia's violations of the speed limit trivial. To the contrary, they were often far above it. The *Counter-Memorial* describes 333 kilometres per hour – equivalent to 207 miles per hour – as the "worst case scenario"[169]. In other words, even though the aircraft were required to fly slower than the speed limit (165 or 140 mph), Colombia claims that in no circumstances would it be possible for them to fly faster than 207 mph. Assuming for a moment that Colombia's "worst case scenario" is accurate, this is over 40 mph faster than the

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[165] *Ibid.*, Appendix 3, p. 14.

[166] *Ibid.*

[167] Hansman & Mena Report, *op. cit.*, p. 20. ER, Vol. II, Annex 1.

[168] *Ibid.*, Appendix 3, p. 27.

[169] CCM, Chap. 7, para. 7.25.

speed limit asserted in the *Counter-Memorial* and over 65 mph faster than the one represented to IACHR.

2.96 But the *Counter-Memorial* is wrong. In fact, the "worst" flying speed within 10 kilometres of Ecuador's border was 246.9 mph (or 397.3 km/hr), which occurred in 2001[170]. That is 82 mph faster than the 165 mph speed limit claimed in the *Counter-Memorial* and 107 mph faster than the one represented to the IACHR. Flights in other years were not much slower. In 2000, planes sprayed near the Ecuadorian border while travelling up to 237 mph[171]. In 2002, they flew as fast as 244 mph, and in 2004 they reached 231 mph[172]. In 2005 and 2006, planes flew up to 231 mph and 220 mph, respectively[173]. Indeed, there were at least **11,113** spray flights – 10 percent of the total – that were faster than what the *Counter-Memorial* describes as the "worst case scenario"[174]. In 2002 alone, the putative worst case was exceeded 5,992 times (16 percent of all flights within 10 kilometres of the border that year)[175]. **Figure 2.4** depicts spray lines flown faster than the *Counter-Memorial*'s "worst case" near Ecuador's Sucumbíos Province.

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[170] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 17. ER, Vol. II, Annex 1.

[171] *Ibid.*

[172] *Ibid.*

[173] *Ibid.* In 2003, Colombia's planes reached 197 mph. In 2007 and 2008, they flew up to 213 and 185 mph, respectively. *Ibid.*

[174] *Ibid.*, p. 20.

[175] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 15. ER, Vol. II, Annex 1.

Flight Speed of Spray Events Within 10 Kilometres of Ecuador's Sucumbíos Province (2000 - 2008)

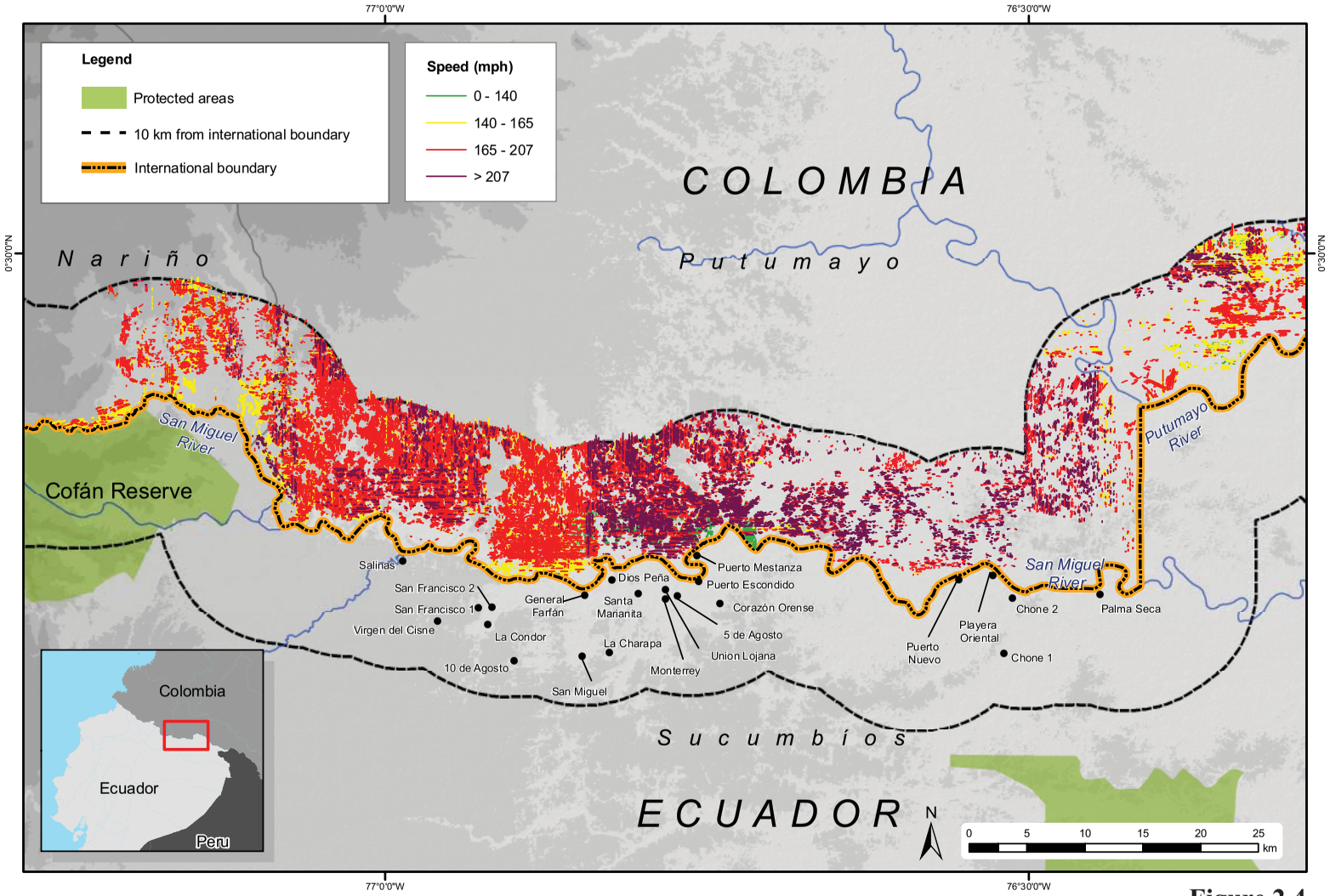

Figure 2.4

2.97 Such violations of the speed limit have a dramatic impact on spray drift, as Colombia itself concedes[176]. The Hansman & Mena Report gives the technical reasons for this: "[i]f the spray aircraft airspeed is too high, the droplets from the spray nozzle will explode into much smaller droplets due to aerodynamic forces as they hit the high relative wind"[177]. This principle, depicted graphically in **Figure 2.5**, has also been recognized by regulatory authorities, including Colombia's own Agriculture Institute, which explained in a 1999 technical report that "emission of drops of small and medium size, coming from the spraying nozzles" which is "influenced by a high speed of operation and turbulence, cause larger breakage of drops"[178]. Likewise, Australia's Operating Principles in Relation to Spray Drift Risk recognize that "high airspeeds can cause excessive fragmentation of droplets delivered by the nozzle system when the droplets are impacted by fast moving air flowing relative to the wing boom"[179]. This will "shatter" the "droplets", making them "more drift prone"[180]. The U.S. EPA likewise explains that "[l]arge droplets released into the turbulence created by an aircraft travelling in excess of 120 mph tend to break into smaller more driftable

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[176] *See* CCM, Chaps. 4 and 7, paras. 4.61, 4.68, 7.17-7.18, 7.32; CCM, Appendix, p. 522-523; CCM, Annex 131-B.

[177] Hansman & Mena Report, *op. cit.*, p. 20, n. 7. ER, Vol. II, Annex 1; *see also* Durham K. Giles, Ph.D., *Spray Drift Modeling of Conditions of Application for Coca Crops in Colombia*, pp. 6, 20 (Jan. 2011) (hereinafter "Giles Report"). ER, Vol. II, Annex 2.

[178] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 13 (23 Dec. 1999). ER, Vol. V, Annex 132.

[179] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 20 (15 July 2008). ER, Vol. III, Annex 22.

[180] *Ibid.*, p. 9.

droplets" due to "shearing effects" caused by high airspeeds[181]. Over 110,000 spray flights were flown at speeds faster than the speed the U.S. EPA said could cause "driftable droplets"[182].

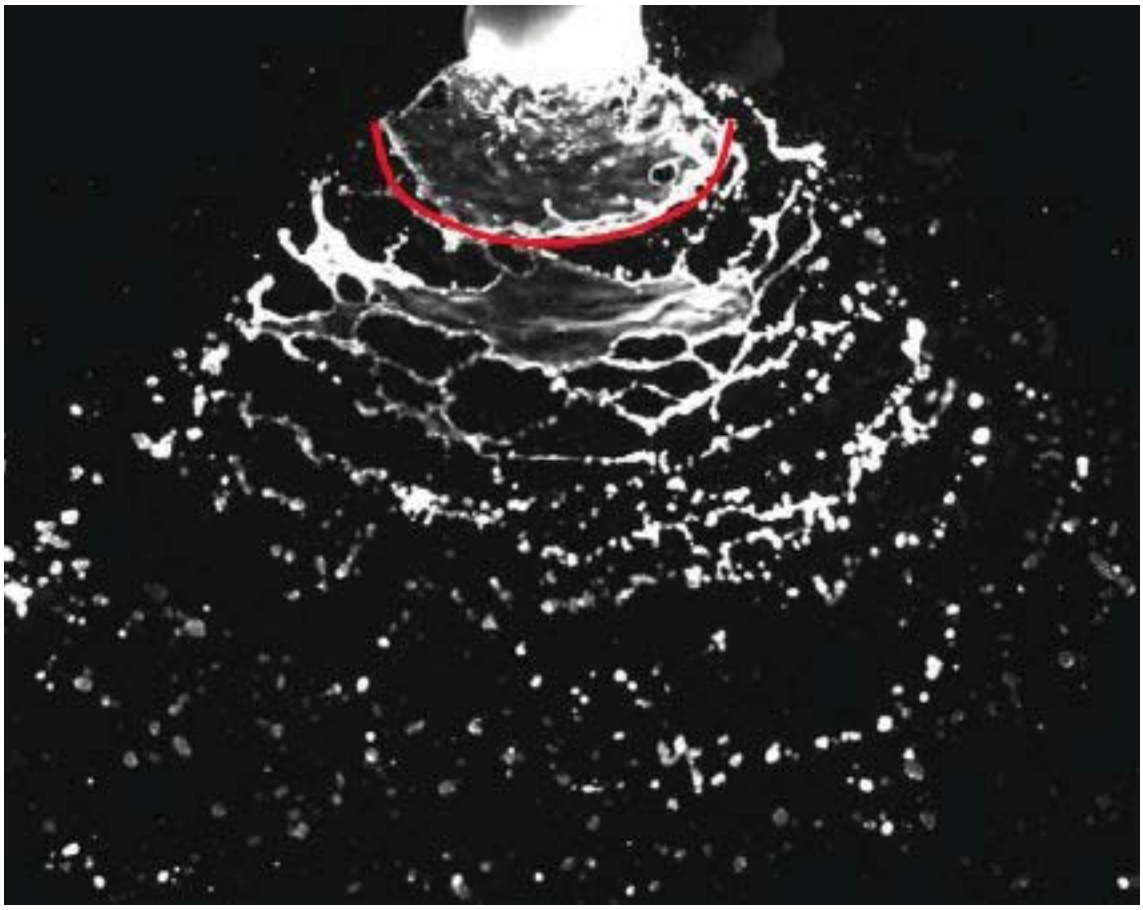

Figure 2.5. Breakup of Spray Droplets as They Encounter Wind Turbulence[183]

[181] EPA 2002 Analysis, *op. cit.*, p. 34. ER, Vol. III, Annex 45.

[182] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 16. ER, Vol. II, Annex 1.

[183] Giles Report, *op. cit.*, p. 6. ER, Vol. II, Annex 2.

2. *Height*

2.98 Flying too fast is not the only factor that Ecuador and Colombia concur increases spray drift. The Parties also agree that a spray mixture is prone to drift longer distances if it is released at too high an altitude. As Colombia states at paragraph 4.68 of the *Counter-Memorial*, "[s]pray drift" is "dependent on the altitude at which spraying takes place"[184]. However, just as Colombia misrepresents its compliance with restrictions on aircraft speed, the *Counter-Memorial* also falsely claims that Colombia has complied with the EMP's requirements regarding the altitude from which the spray is released.

2.99 On paper at least, Colombia has imposed limits regarding the height from which the spray mixture may be released, in order to prevent it from drifting. For example, Colombia informed Ecuador in April 2004, that is, over four years into the programme, that the "[h]ighest release height" is "25 meters in compliance with technical parameters"[185]. Colombia said the same thing in September 2005 when it represented to the Inter-American Commission on Human Rights that the "flight altitude" for its "spraying operations" is "not above 25 metres"[186]. By the

[184] CCM, Chap. 4, para. 4.88. *See also ibid*., Chap. 7, para. 7.17.

[185] Note No. SARE -142 from the Director of the National Narcotics Directorate of Colombia to the President of the Scientific and Technical Commission of Ecuador, 14 Apr. 2004. CCM, Vol. II, Annex 13.

[186] Diplomatic Note No. DDH 58003 from the Colombia Foreign Ministry to the Executive Secretary of the Inter-American Commission on Human Rights, p. 52, 18 Sep. 2005. CCM, Vol. II, Annex 19.

time Colombia made that representation, spraying near the Ecuadorian border had been ongoing for over five-and-a-half years[187].

2.100 Colombia appears to have recognized that it was on shaky ground in claiming that it complies with the height limitation. Thus, notwithstanding its representations to Ecuador and the IACHR that its spray planes were forbidden from spraying above 25 metres, Colombia's current EMP doubles the height limit to 50 metres so that it can more comfortably claim that the standard is not exceeded.[188] In the *Counter-Memorial*, Colombia states that its aerial spraying "usually" takes place at a height of 30 metres[189]. No data are presented, however, in support of this representation, or any of its other claims about the altitude at which it releases the herbicide.

2.101 Yet again, Colombia's representations are contradicted by the evidence. The data collected by the spray planes demonstrate that Colombia routinely exceeds the allowable altitude for releasing the chemical spray, regardless of

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[187] Moreover, at the time Colombia made these representations, it had an Environmental Management Plan in place – since September 30, 2003 – which provided that the maximum application height was 50 metres. Resolution Nº 1054 of 30 September 2003 of the Ministry for the Environment of Colombia, p. 173. CCM, Vol. II, Annex 50. Thus, Colombia was allowing its spray planes to operate twice as high as it admitted to Ecuador and the IACHR.

[188] Resolution No. 1054 of 30 September 2003 of the Ministry of Environment of Colombia. CCM, Vol. II, Annex 50, p. 173.

[189] CCM, Chap. 4, para. 4.62 ("The Environmental Management Plan foresees a maximum flight altitude of 50 meters when spraying, subject to geographical features or obstacles so as to avoid risks to the pilots".). *See also* CCM, Chap. 7, para. 7.32 ("aircraft fly at low altitudes, usually 30 meters").

whether the permitted ceiling is 25 metres, as Colombia represented to Ecuador and the IACHR, or 50 metres, as Colombia claims in the *Counter-Memorial*. As the U.S. Department of State concluded in one of its evaluations, Colombia's "pilots" are "flying . . . too high on spray passes"[190]. The USDA came to the same conclusion after conducting a field verification mission in 2001, reporting "decreased efficiency" due to "spraying" at "too high an altitude"[191].

2.102 The U.S. Departments of State and Agriculture were right: Colombia's planes do fly "too high" and at "too high an altitude". Indeed, they frequently spray at altitudes far above the prescribed limit. In fact, nearly all of Colombia's spraying near the Ecuadorian border – 96 percent – has been done in violation of the 25 metre height restriction it once told Ecuador and the IACHR was the allowable limit[192]. The total number of flights in excess of 25 metres is 89,124[193]. In 2002 alone, Colombia released the chemical spray at altitudes higher than 25 metres **37,293 times**[194].

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[190] Memorandum from Tim Doty, COR, INL/RM/AS to Dyncorp, PSD Manager, p. 3 (28 May 1997). ER, Vol. III, Annex 37.

[191] U.S. Department of Agriculture, Agricultural Research Service, *Colombia Coca Verification Mission April-May 2001*, p. 2 (7 July 2001). ER, Vol. III, Annex 41.

[192] Hansman & Mena Report, *op. cit.*, p. 19. ER, Vol. II, Annex 1.

[193] *Ibid.*

[194] *Ibid.*, Appendix 3, p. 5.

2.103 Nor were these violations of the 25 metre limit trivial. In fact, Colombia released the chemical spray from a height over 50 metres, that is, double the 25 metre limit, at least **16,143 times** between 2000 and 2008[195]. This represents 17 percent of all spraying near the Ecuadorian border[196]. The altitude violations in Ecuador's Sucumbíos Province are depicted in **Figure 2.6**[197].

2.104 As noted above, the *Counter-Memorial* acknowledges that releasing the spray mixture at an excessive height increases drift[198]. The Giles Report explains:

> "A critical parameter in the potential for spray drift is the aircraft altitude or height of the application above the underlying canopy. When spray droplets are released, they must travel from the point of release downward to the intended target. Any cross wind that affects the droplets during their downward trajectory will displace them downwind. As the height of release increases, the travel time

[195] Hansman & Mena Report, *op. cit.*, p. 19. ER, Vol. II, Annex 1. For example, in 2000, Colombia sprayed the chemical herbicide at heights that reached 196 metres. Hansman & Mena Report, *op. cit.*, Appendix 3, p. 8. ER, Vol. II, Annex 1. That is more than 7 times higher than the 25 metre height restriction that Colombia claimed to Ecuador and the IACHR, and more than 3 times the 50 metre limit claimed in the *Counter-Memorial*. There were many spray missions that year that flew far in excess of the height restriction. For example, at least nine other flights exceeded 170 metres in altitude. *Ibid*. In 2006, more than 10 flights were higher than 120 metres. *Ibid.* 2007 was even worse: Colombia sprayed as high as 170 metres, and at least 10 flights were over 125 metres. *Ibid*.

[196] *Ibid.*, p. 19.

[197] Hansman & Mena Report, *op. cit.*, pp. 7-10. ER, Vol. II, Annex 1.

[198] CCM, Chaps. 4 and 7, paras. 4.68, 7.17, 7.32, Appendix, paras. 22-25; A.J. Hewitt et al., "Spray Droplet Size, Drift Potential, and Risks to Nontarget Organisms from Aerially Applied Glyphosate for Coca Control in Colombia", in *Journal of Toxicology and Environmental Health*, Part A, 72:930-936 (2009) (hereinafter "Hewitt et al., 2009"). CCM, Vol. II, Annex 131-B.

Altitude of Spray Events Within 10 Kilometres of Ecuador's Sucumbíos Province (2000 - 2008)

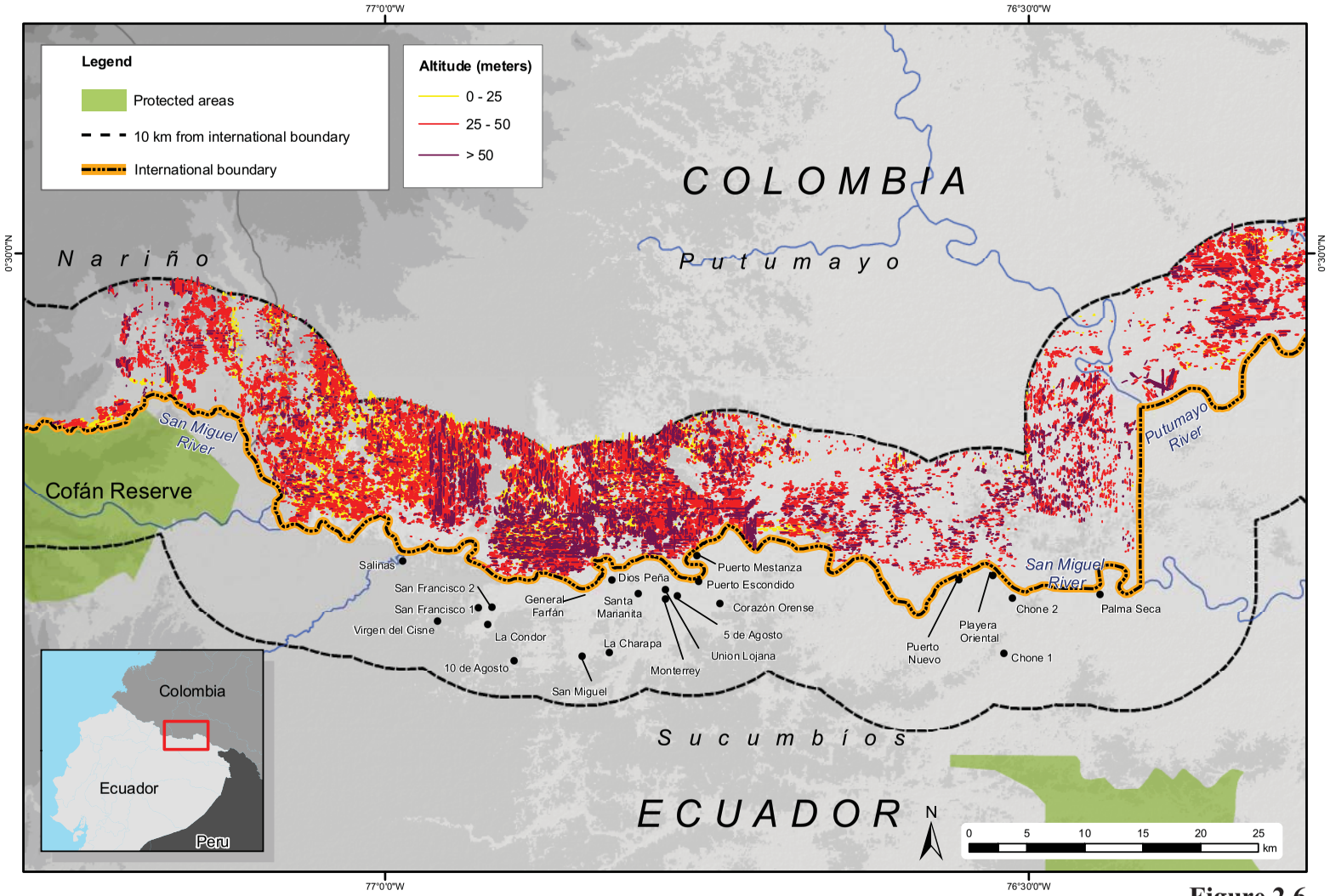

Figure 2.6

> of the droplets increases correspondingly, allowing a greater horizontal displacement of the droplets to occur"[199].

2.105 This is understood by regulatory authorities the world over. For example, Australia's Operating Principles in Relation to Spray Drift Risk observe that "[s]pray release height" is one of the "major factors affecting spray drift risk: the higher the release height, the greater the potential for off target drift"[200].

2.106 In fact, few if any aerial spraying programmes have ever been conducted at the heights flown by Colombia's spray planes. Typically, aerial spraying of pesticides for agricultural purposes is performed only a few metres above crop level, to avoid drift away from the target site[201]. In a 2004 study commissioned by Colombia (which is not cited in the *Counter-Memorial*), Colombia's own technical consultants acknowledged after reviewing the available literature on spray drift, that "there is no information regarding aerial spraying of illicit crops from more than 20 meters of altitude"; therefore, "the corresponding technical parameters cannot be used as applicable references for the spraying done in

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[199] Giles Report, *op. cit.*, p. 16. ER, Vol. II, Annex 2; *see also* Hansman & Mena Report, *op. cit.*, p. 18, n. 6 ("The altitude above ground level impacts spray drift. The higher the initial spray application, the more time the spray has to drift during its descent to the ground".). ER, Vol. II, Annex 1

[200] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 24 (15 July 2008). ER, Vol. III, Annex 22. *Ibid.*, p. 9 ("higher release heights add to spray drift risk").

[201] *See infra* Chap. 4, para. 4.108; Giles Report, *op. cit.*, p. 16. ER, Vol. II, Annex 2.

Colombia"[202]. Accordingly, Colombia has no experiential basis for concluding that its height limit of 25 metres, let alone of 50 metres, is sufficient to prevent spray drift.

2.107 The risks of extensive spray drift caused by releasing the spray mixture at higher-than-allowed altitudes are, of course, multiplied when the spray is also released at higher-than-allowed flight speeds[203]. The data generated by the spray planes and obtained from the U.S. Department of State show that Colombia's violation of both altitude and speed limits simultaneously has been a common occurrence. More than 92 percent of all recorded flights between 2000 and 2008 – 85,364 separate spray events within 10 kilometres of Ecuador's border – exceeded the 140 mph speed limit *and* the 25 metre altitude restrictions simultaneously[204]. The more lenient restrictions of 165 mph for speed and 50 metres for altitude were also frequently breached in tandem: 12,155 times to be exact, which represents 13 percent of all flights[205]. Colombia's exceedances of the parameters for both height and speed, and the corresponding implications for

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[202] Las Palmas Ltda., Technical Department, *Glyphosate (10,4 l/ha) and Three Different Adjuvants, For Illicit Coca Crop (Erythoxylum spp.) Control, Agronomic Efficacy Testing of Doses of Glyphosate in Illicit Crops: Final Report*, p. 12 (July 2004) (hereinafter "Las Palmas Report"). ER, Vol. III, Annex 15.

[203] Giles Report, *op. cit.*, pp. 11-15. ER, Vol. II, Annex 2.

[204] Hansman & Mena Report, *op. cit.*, p. 21. ER, Vol. II, Annex 1.

[205] *Ibid.* These values represent the number of flights with recorded data for both parameters (speed and altitude). *Ibid.*

spray drift, in comparison to typical aerial spraying operations, are shown in the schematic drawing found at **Figure 2.7.**

3. Reasons for Exceeding the Speed and Height Requirements

(a) Colombia's Spray Planes Fly High and Fast To Evade Hostile Gunfire From the Ground

2.108 In the *Memorial*, Ecuador pointed out that the pilots responsible for flying Colombia's spray planes have an incentive to exceed the required height and speed limits. The reason is simple: narco-traffickers protecting their illicit crops attempt to shoot them down[206]. Moreover, variable topography and towering rainforest trees present physical hazards for Colombia's spray pilots[207]. It is self-evident that these failures would cause the pilots to fly higher and faster than they otherwise would, in violation of the spray programme's mandatory operational parameters[208].

2.109 The *Counter-Memorial*, however, denies that the spray planes are subjected to hostile gunfire, and asserts that Colombia's pilots have no incentive

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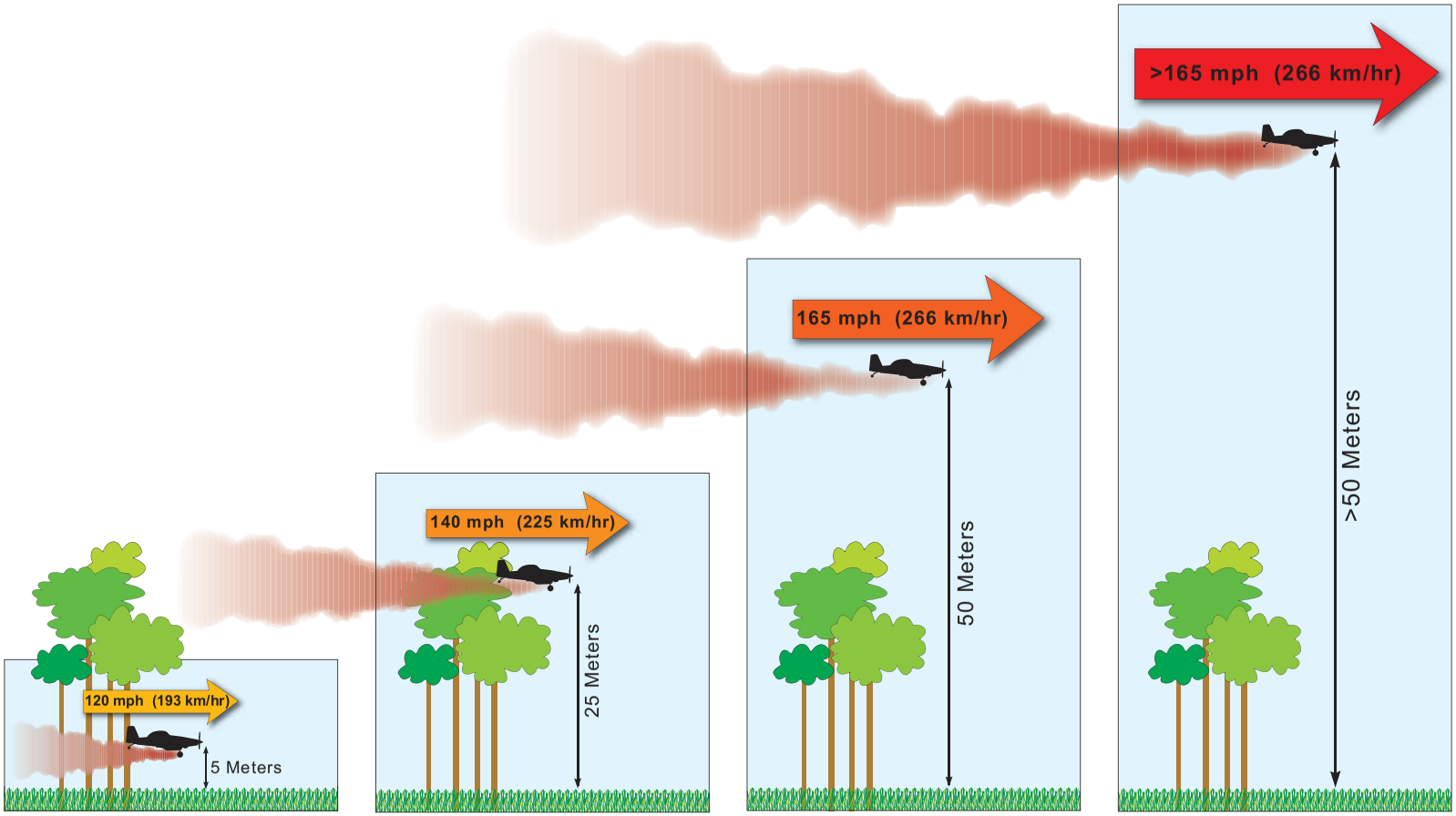
[206] EM, Chap. 5, para. 5.95.

[207] *Ibid.*, Chap. 5, paras. 5.93-5.94.

[208] There are other reasons that would encourage the pilots to exceed these restrictions as well. For example, when flying at night, without the benefit of being able to see the ground, the aircraft are likely to fly high. Likewise, the height of the surrounding tree canopy can at times exceed 50 or even 65 metres. Henrik Balslev, Ph.D., *The Vulnerability of the Ecuador-Colombia Border Region to Ecological Harm*, pp. 7, 18, 25 (Jan. 2011) (hereinafter "Balslev Report"). ER, Vol. II, Annex 4.

Effects of Altitude and Flight Speed on Spray Drift



Typical Agricultural Spraying

Colombia's representation to Inter-American Commission on Human Rights

Colombia's representation in Counter Memorial

Actual Case
16,143 flights above 50 meters
75,841 flights faster than 165 mph

Figure 2.7

to fly too high or too fast. However, that they do both is no longer disputable, given the flight data obtained from the U.S. Department of State. The only question is why. At paragraph 4.61, Colombia states that prior to spray missions there is "an assessment of whether the minimum requisite security" is "present in the areas to be sprayed" and that "[a]ny alteration to these conditions entails the immediate cancellation of the spraying mission"[209]. Similarly, at paragraph 4.70, Colombia asserts there is no incentive to fly high or fast because "no spraying operations are authorized on plots that are assessed as being high risk until military operations to guarantee appropriate security conditions are carried out"[210]. In other words, according to the *Counter-Memorial*, the planes do not spray in areas where they are vulnerable to hostile gunfire and thus have no incentive to exceed the height and speed limits touted in the *Counter-Memorial*.

2.110 Here, again, the evidence negates Colombia's assertions. For example, the shooting of spray planes has been frequently reported in the press, in articles with titles like *Anti-Drug Plane Shot Down, U.S. Says*[211]. The danger faced by

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[209] CCM, Chap. 4, para. 4.61.

[210] *Ibid.*, Chap. 4, para. 4.70. *See also ibid.*, Chap. 7, para. 7.25 ("no spraying operations are authorized on plots that are assessed as being high risk until military operations to guarantee appropriate security conditions are carried out, and spraying missions are cancelled if the situation changes").

[211] *See, e.g.*, "Anti-drug plane shot down, U.S. says", CHICAGO TRIBUNE (Chicago, 23 Sept. 2003) (quoting a Dyncorp spokesman as saying that an "aircraft was struck by hostile ground fire"). ER, Vol. IV, Annex 77; Tod Robberson, "2 U.S. Pilots Die on Colombian Anti-Narcotics Mission", DALLAS MORNING NEWS (Dallas, 29 July 1998) ("Colombian and U.S. military sources said . . . leftist guerrillas . . . frequently try to shoot down government aircraft on illicit-crop eradication missions". "Their work has become so dangerous in recent months – due mainly to anti-aircraft

Colombia's spray pilots was also conveyed in an article in *Soldier of Fortune* magazine entitled *Pray and Spray*[212].

2.111 Colombia's claim that the planes do not spray areas where there is a risk of hostile gunfire is further refuted by the testimony of a spray pilot who spent years working in the aerial spraying programme. The pilot testified that he and his colleagues are frequently subjected to armed attack, both from gunfire and from improvised explosive devices:

> "narco-terrorist and criminal groups oppose and attempt to disrupt the drug-spraying missions that I and others fly in Colombia. These opposition and disruption efforts include such conduct as shooting at the low-flying aircraft with high calibre firearms from the ground, rigging above-ground wires to snag and damage the aircraft, and placing tall poles or trees (with limbs removed) that cannot easily be seen from the fast-moving aircraft to create obstacles. On several occasions, our aircraft have been rocked by

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fire from guerrillas and other gunmen protecting illicit-crop fields and drug laboratories – that earlier this year, they began conducting eradication missions at night to make their aircraft harder to target".). ER, Vol. IV, Annex 53.

[212] Steve Salisbury, "Pray and Spray: SOF With Coke-Bustin' Broncos", SOLDIER OF FORTUNE, p. 61 (July 1998) (describing the shooting down of spray planes and death and injuries caused to pilots). ER, Vol. IV, Annex 52. The DNE, which is responsible for the spray program, was also warned that spraying under these conditions leads to an increased risk of off-target drift. In a letter sent to the DNE, Colombia's Minister of Environment stated that "the greatest possibility of spraying areas that are not the object of the program are related to errors on the spraying process, which depend on conditions of public order and the difficulty of the operation". Among other risks, the Minister of Environment noted "deviation from the flight path due to attack or risk of an accident" and "invasion of buffer zones due to human error". Letter from Juan Mayr Maldonado, Minister of the Environment, Republic of Colombia, to Gabriel Merchan Benevides, Director General of the National Drug Directorate, Republic of Colombia (Undated). ER, Vol. V, Annex 140.

> explosions from remote-controlled Improvised Explosive Devices ('IEDs') installed in the tops of tall trees"[213].

2.112 Continuing, the pilot testified regarding the deaths and injuries that these hazards have caused:

> "I have personally witnessed all of these dangers. I have had aircraft I was piloting seriously damaged by weapons fire to the point where I had to abort my spraying mission and return to base. I have seen obstacles intentionally placed as hazards to low-flying spray planes. I have known fellow pilots who were killed during spraying missions in plane crashes caused by these types of hazards"[214].

2.113 This testimony is confirmed by contemporaneous State Department reports that record the extensive time and resources required to make bullet-ridden aircraft serviceable again. For example, in March 2003, the State Department reported that aircraft participating in the aerial spraying programme experienced "16 incidents of hostile fire resulting in 47 individual small arms hits"[215]. These "battle damage incidents" – to use the State Department's words – required the expenditure of "[a]pproximately 2,000 maintenance man-hours" to make the necessary repairs[216]. The following month, damage from hostile fire was even worse. "Colombia's eight OV-10 recorded 1,989 depot hours (83 days)

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[213] United States District Court of the District of Colombia, *Arias, et al. v. Dyncorp, et al., Quinteros*, et al. v. Dyncorp, et al., Declaration of Redacted Witness, para. 6 (2 June 2010). ER, Vol. IV, Annex 117.

[214] *Ibid.*

[215] Memorandum from Lowell Neese, Senior Aviation Advisor, DoS/INL/A (Colombia), to Paul O'Sullivan, COR, DoS/INL/A, p. 6 (21 Apr. 2003). ER, Vol. III, Annex 46.

[216] *Ibid.*

for battle damage reports", equalling "almost 3,000 maintenance man-hours"[217]. These statistics prompted the State Department to complain that the "3000+ maintenance man hours detracted from aircraft availability"[218].

2.114 Beyond the incentive to fly higher and faster that is provided by the risk of attack and other hazards from the ground, the variable terrain in the border region also compels pilots to operate spray missions at greater altitudes. The rainforest canopy, which itself may reach up to 30 to 35 metres in height, and towering emergent trees which reach higher still, present significant physical obstacles[219]. The DNE itself has indicated that it is "impossible" to follow fixed altitude parameters given the variable terrain and other factors:

> "Regarding flight height. As is well known, illicit crops are located in different landscapes, varying topographical conditions and many plots present obstacles, in addition to the dangers of drug traffickers, which make it impossible for the operation to follow fixed parameters. It must be recalled that the spraying is not being carried out on plots of rice, cotton or banana fields where

[217] Memorandum from Lowell Neese, Senior Aviation Advisor, DoS/INL/A (Colombia), to Paul O'Sullivan, DoS/INL/A, p. 2 (9 May 2003). ER, Vol. III, Annex 47.

[218] *Ibid.*

[219] Balslev Report, *op. cit.*, pp. 7, 18, 25. ER, Vol. II, Annex 4. *See also* Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 12 (23 Dec. 1999); Charles A. Menzie, Ph.D., Pieter N. Booth, MS & Susan B. Kane Driscoll, Ph.D., with contributions/advice from Angelina J. Duggan, Ph.D., Charlotte H. Edinboro, DVM, Ph.D., Anne Fairbrother, DVM, Ph.D., Marion J. Fedoruk, MD, CIH, DABT, FACMT, Janice Chunn Lindsay, Ph.D., Katherine Palmquist, Ph.D. & Brian J. Prince, MRQA, Evaluation of Chemicals Used in Colombia's Aerial Spraying Program and Hazards Presented to People, Plants, Animals, and the Environment in Ecuador, p. 12 (Apr. 2009) (hereinafter "Menzie et al., 2009"). EM, Vol. III, Annex 158.

conditions for spraying are uniform and do not present any obstacles"[220].

(b) Colombia Uses Aircraft Unsuited for Aerial Spraying

2.115 The *Counter-Memorial* misrepresents the type of aircraft Colombia uses in the spray programme, falsely claiming to use only aircraft that are designed for depositing chemical sprays with pinpoint accuracy[221]. In fact, many of the spray missions have been conducted with military aircraft ill-suited for aerial spraying. This, too, increases the likelihood of extensive spray drift.

2.116 Colombia asserts that the only aircraft employed in the aerial spraying programme is the AT-802, an aircraft specifically designed for aerial application of pesticides[222]. For example, at paragraph 4.63, Colombia states that "[t]he aircraft used for spraying operations are AT-802 planes manufactured by Air Tractor"[223]. A photograph of the AT-802 is shown at **Figure 2.8**. The *Counter-Memorial* declares that since Colombia uses this model of aircraft exclusively, the Court can be confident that spray does not drift into Ecuador because the AT-802 is "specially designed to operate with precision during those tasks and possesses a

[220] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 143*, p. 4 (29 Mar. 2000). ER, Vol. V, Annex 133.

[221] CCM, Chaps. 4 and 7, paras. 4.63, 7.32, 7.172.

[222] *Ibid.*, Chap. 4, para. 4.63; Hansman & Mena Report, *op. cit.*, p. 25. ER, Vol. II, Annex 1.

[223] CCM, Chap. 4, para. 4.63.

system of tanks, nozzles and pumps similar to those used for the spraying of crops in other parts of the world"[224].

Figure 2.8. Photograph of AT-802 Spray Plane[225]

2.117 Here is another example of a misrepresentation by Colombia regarding the spray programme. The AT-802 is *not* the only aircraft used in Colombia's aerial spraying programme. Nor is it even the predominant one. To the contrary, the majority of aerial sprayings between 2000 and 2008 were carried out by aircraft

[224] *Ibid.*

[225] Hansman & Mena Report, *op. cit.*, p. 25. ER, Vol. II, Annex 1.

other than the AT-802[226]. And the aircraft that Colombia has used are especially prone to causing long-range spray drift.

2.118 Most significantly, Colombia has made extensive use of the OV-10, a military aircraft neither designed nor suitable for use in aerial spraying. This usage is clear from testimony provided by a pilot with many years of experience flying aircraft in Colombia's spraying programme, who testified that the "OV-10 Bronco" is "used for aerial spraying missions"[227]. Colombia's widespread use of this aircraft is also confirmed by evaluation reports produced by the U.S. Department of State, and by reliable accounts published in the news media[228].

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[226] Hansman & Mena Report, *op. cit.*, p. 24. ER, Vol. II, Annex 1; *ibid.*, Appendix 3, p. 25.

[227] United States District Court of the District of Colombia, *Arias, et al. v. Dyncorp, et al., Quinteros, et al. v. Dyncorp, et al.*, Declaration of Redacted Witness (2 June 2010). ER, Vol. IV, Annex 117.

[228] *See* Chemicals Used, *op. cit.*, p. 3. EM, Vol. III, Annex 144; United States Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Updated Report on Chemicals Used in the Aerial Eradication Program*, p. 3 (Dec. 2003). EM, Vol. III, Annex 148; Report by the Ministry for the Environment, Housing and Territorial Development on the Program for the Eradication of Illicit Crops by Aerial Spraying with Glyphosate Herbicide – PECIG, February 2010, Appendix 1: Sample Report of a Verification Mission (Technical Report – 19th Verification Mission concerning the spraying operations conducted between September 2008 and February 2009), p. 347. CCM, Vol. II, Annex 70; K.R. Solomon et al., "Human Health and Environmental Risks from the Use of Glyphosate Formulations to Control the Production of Coca in Colombia: Overview and Conclusions", in *Journal of Toxicology and Environmental Health*, Part A, 72:914-920, p. 914 (2009). CCM, Vol. III, Annex 131-A; A.J. Hewitt et al., "Spray Droplet Size, Drift Potential, and Risks to Nontarget Organisms from Aerially Applied Glyphosate for Coca Control in Colombia", in *Journal of Toxicology and Environmental Health*, Part A, 72:921-929, 2009. CCM, Vol. III, Annex 131-B; E.J.P. Marshall et al., "Coca (*Erythroxylum coca*) Control is Affected by Glyphosate Formulations and Adjuvants", in *Journal of Toxicology and Environmental Health*, Part A, 72:930-936 , p. 930 (2009). CCM, Vol. III, Annex 131-C; Steve Salisbury, "Pray and Spray: SOF With Coke-Bustin' Broncos", SOLDIER OF FORTUNE, p. 72 (July

2.119 The great extent to which Colombia has used the OV-10 is reflected in the data generated by the planes' on-board equipment, which record the type of aircraft in use. These records make clear that the OV-10 has been employed on a vast scale. Indeed, in the 10-kilometre area near the Ecuadorian border, Colombia has used the OV-10 for aerial spraying at least **20,251 times**[229]. This represents 18 percent of all the sprayings along or near the border. The volume of spray mixture deposited by OV-10s is impressive: over 376,000 litres[230].

2.120 Colombia's use of the OV-10 for aerial spraying dramatically increases the likelihood of spray drifting into Ecuador. Unlike the AT-802 – the aircraft Colombia falsely claims is the only plane used – the OV-10 was not designed for aerial spraying or any other agricultural or forestry application[231]. To the contrary, the OV-10, shown in **Figure 2.9**, is an armed military reconnaissance airplane used for observation and counterinsurgency missions[232]. Among other problems, it flies too fast for use in aerial spraying. The data show that it has almost never sprayed while flying within the prescribed speed limit. Of the 20,251 times Colombia sprayed near the Ecuadorian border using an OV-10, it

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1998) (quoting spray programme pilots as saying that "the OV-l0 may be good for reconnaissance and being armed. But it isn't as accurate as the Thrush for spraying".). ER, Vol. IV, Annex 52.

[229] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 25. ER, Vol. II, Annex 1.

[230] *Ibid.*, Appendix 3, p. 27.

[231] *Ibid.*, p. 27.

[232] *Ibid.*, p. 27. Janes All The World's Aircraft, p. 421 (stating that the OV-10 aircraft was designed as an "armed reconnaissance aeroplane . . . specifically suited for counterinsurgency missions").

flew faster than the 165 mph speed limit claimed in the *Counter-Memorial* more than 99 percent of the time, and faster than Colombia's self-described "worst case scenario" speed of 333 km/hr 56 percent of the time[233].

Figure 2.9. Photograph of OV-10 Aircraft.[234]

2.121 As a consequence, chemical spray released from the OV-10 is particularly prone to drift[235]. This problem was recognized by one of Colombia's own spray pilots, who stated: "The OV-10s fly so fast that the air turbulence doesn't allow

[233] *Ibid.*, Appendix 3, p. 18.

[234] Hansman & Mena Report, *op. cit.*, p. 27. ER, Vol. II, Annex 1.

[235] *Ibid.* ("[T]he OV-10 was operated at a significantly higher airspeed than other aircraft type. . . the high speed results in smaller droplets in the spray which will drift further".).

the herbicide to fulfill its purpose. *The herbicide is blown into a scatter and vanishes*"[236]. It was also acknowledged by the USDA which, after conducting a verification mission in 2001, recommended that, "to avoid overspray[]", the programme should stop using "[the] OV-10" for small fields after finding evidence of "[s]erious overspraying"[237].

2.122 Perhaps Colombia will eventually explain why it has used the OV-10 for aerial spraying when it is manifestly unsuited for that purpose (and why it conceals these facts in the *Counter-Memorial*). Until it does so, the best explanation might be the one published in *Soldier of Fortune* magazine, to the effect that OV-10s are "cheap" because they are "obtained" from "surplus collecting dust in the bone yards of U.S. federal agencies in Maryland and Virginia"[238].

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[236] Steve Salisbury, "Pray and Spray: SOF With Coke-Bustin' Broncos", SOLDIER OF FORTUNE, p. 72 (July 1998). ER, Vol. IV, Annex 52. *See also ibid.* ("The OV-10 may be good for reconnaissance and being armed. But it isn't as accurate as the Thrush for spraying".).

[237] U.S. Department of Agriculture, Agricultural Research Service, *Colombia Coca Verification Mission April-May 2001*, p. 78 (7 July 2001). ER, Vol. III, Annex 41.

[238] Steve Salisbury, "Pray and Spray: SOF With Coke-Bustin' Broncos", SOLDIER OF FORTUNE, p. 72 (July 1998). ER, Vol. IV, Annex 52. Nor is the OV-10 the only other aircraft used by Colombia in the aerial fumigation programme. Colombia also makes extensive use of still another aircraft, the T-65, which was used for 52,025 spray events within 10 kilometres of Ecuador's border. Hansman & Mena Report, *op. cit.*, Appendix 3, p. 25. ER, Vol. II, Annex 1. The T-65 also creates a significant risk of off-target drift. As explained by the Colombian Agricultural Institute, "Turbo Thrush Commander aircrafts . . . are "high speed" aircraft. The use of these planes is problematic because it "influences the aspersion cloud that is discharged, producing smaller drops, compared to those produced by Helicopters, which are classified as *low speed*". Republic of Colombia, Colombian Agriculture and Livestock Institute, ICA Concepts Regarding A Report Issued by the Environmental Audit Techeca Ltda., p. 4 (1994) (emphasis in original).

(c) The Pilots of the Spray Planes Lack Proper Training and Discipline, and Routinely Ignore Operational Requirements to Prevent Spray Drift

2.123 The *Counter-Memorial* represents that the spray pilots are well-trained professionals with extensive aerial spraying experience. Paragraph 4.63 states: "The spray personnel – pilots – are provided by DynCorp, Inc., a private company" and these "pilots are specifically certified, trained and experienced". Similarly, paragraph 7.17 emphasizes that the "Aircrew are fully trained and flights are monitored and recorded". This is yet another example of how the *Counter-Memorial* misrepresents key aspects of the aerial spraying programme.

2.124 The deficiencies in the management and execution of the programme, including in the capability and responsibility of the pilots, was highlighted by the U.S. Department of State, which observed that the "expansion of [aerial spraying] operations" during the 1990s "brought with it associated problems in Colombian contract pilot capability"[239], and expressed concern about their "lack of

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ER, Vol. V, Annex 122; *see also ibid.*, p. 7. It appears that *none* of the aircraft used by Colombia were properly evaluated prior to their use for aerial spraying. A report by the Colombian Agricultural Institute in 1999 states that "[w]e consider that the authorization for equipment and aircraft must first respond to a technical evaluation regarding its effectiveness. The ICA evaluated the applications carried out via helicopter, positively conceptualizing on its use; however, it did not do this for applications via airplane, despite the fact that applications are being carried out via airplane. In this regard, the technical concepts have been issued in a timely manner but have not been taken into account". Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 11 (23 Dec. 1999). ER, Vol. V, Annex 132.

[239] Memorandum from Peter P. Trent, INL/RM/ASD, PSC Bogota, to Grant Harden, INL/RM/ASD, COR, p. 2 (4 July 1996). ER, Vol. III, Annex 34.

experience"[240]. The State Department cited as a particular problem the fact that "management" had failed to "adequately deal with the pilots (*sic*) lack of discipline"[241].

2.125 The same concerns about pilot capability and lack of experience continued to be voiced by the State Department over the next 10 years. The State Department criticized the slipshod manner in which pilots were trained, finding that the programme was so deficient that, in a classic case of the blind leading the blind, novice pilots were themselves placed in charge of training those with even less experience:

> The contractor developed pilot training program for the OV-10 does not yet meet FAR [Federal Aviation Regulations] requirements. Since there is no FAA or DoS [Department of State] approved pilot training program, pilots with less than 50 airframe hours are signed off as instructor pilots. These instructor pilots are in turn training other instructor pilots and plans are to sign them off as instructor pilots with the same minimum training[242].

2.126 Such deficiencies in pilot training and discipline were raised in many State Department evaluations. One observed that the "pilots being trained" were "demonstrating lapses of pilot discipline and lack of ability to follow published

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[240] Memorandum from David Johnson, INL/C/ASD, to Grant Harden, INL/C/ASD, p. 1 (14 Nov. 1996). ER, Vol. III, Annex 35.

[241] *Ibid.*

[242] Memorandum from Tim Doty, COR, INL/RM/AD, to Dyncorp, PSD Manager, pp.1-2 (Aug. 1997). ER, Vol. III, Annex 38.

guidance" and that this "lack of discipline is singularly the most dangerous safety of flight issue"[243]. This was demonstrated by:

> "clear examples that some spray pilots were using poor judgment. This, combined with unacceptable techniques resulted in collateral damage to legitimate crops and pastures. The overall damage to the image of the program this month by these pilots was significant"[244].

2.127 The State Department reported that although these "issues" had been brought to the attention of the programme's "management", the managers still "maintained their focus on meeting deadlines while sometimes jeopardizing safety"[245]. The State Department therefore concluded that "*Management is not adequately supporting program safety*"[246].

2.128 Repeated attempts to address these problems fell on deaf ears. In 1999, the State Department was forced to conclude that the "contractor" had "failed to provide adequate OV-10 experience level" and that "for almost six months the

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[243] Memorandum from David Johnson INL/C/ASD to Grant Harden, INL/C/ASD, p. 1 (12 Dec. 1996). ER, Vol. III, Annex 36.

[244] *Ibid.*

[245] *Ibid.*

[246] *Ibid.* Another evaluation reported that the spray planes were:

> "operating in Colombia without a base of reference to operate from and are developing tasks as they need. Considering the hostile environment and the harsh operating conditions, this seems to be the least safe approach and dramatically increases the risk associated with the mission. Contractor operations should have taken a more proactive approach as directed by the DoS/AD Chief to prevent this situation".

Memorandum from Tim Doty, COR, INL/RM/AS to Dyncorp, PSD Manager, p. 9 (28 May 1997). ER, Vol. III, Annex 37.

contractor has not provided adequate OV-10 standardization oversight of the OV-10 program"[247].

2.129 Another inspection, this time in 2000, observed serious "deficiencies" that, the State Department determined, "requires immediate attention by management"[248]. These problems included such basic issues as "the overall organization and chain of command", which, the State Department concluded, had "led to several complications and an overall confusion about duties and responsibilities"[249]. Among other criticisms leveled by the State Department were the following, each of which identified fundamental problems with the spray programme:

- "managers" had "no record of a job description or briefings as to duties and responsibilities";
- incoming personnel were "not provided any formal in-processing" and that "procedures are not briefed, provided or discussed";
- "[n]o self-inspection program exist[ed] except for a limited quality control audit program";
- "[m]anagers" were "unfamiliar with the contract and technical directives";

[247] Memorandum from Stephen H. Harris, INL/RM/AD, to Dyncorp, p. 3 (21 June 1999). ER, Vol. III, Annex 39.

[248] Aviation Resource Management Inspection of Air Wing Colombia Site, p. 1 (23 Mar. 2000). ER, Vol. III, Annex 40.

[249] *Ibid.*

- "[c]ompliance with procedures" needed to be "improved to increase both safety of personnel involved and effectiveness" of the "mission"; and

- "[t]he Site Safety Manager in Colombia" was "not conducting required safety inspections, surveys and hazard analysis"[250].

2.130 In light of these pervasive problems, the State Department made the following determination: "*Overall complacency towards safety is a primary concern and needs to be corrected immediately*"[251].

2.131 Apparently, no such corrections were made. In February 2001, the State Department complained about the "constant[]" need to "remind spray pilots of what to avoid, for example villages, etc"[252]. Several months later, the State Department was forced to criticise the spray programme for the "observed substandard condition of the aircraft", which it determined was a "direct reflection of being understaffed"[253]. The State Department insisted that "**IMMEDIATE** attention in this area is recommended!"[254].

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[250] Aviation Resource Management Inspection of Air Wing Colombia Site, pp. 2-6, 28 (23 Mar.2000). ER, Vol. III, Annex 40.

[251] *Ibid.*

[252] Memorandum from Michael J. Kenna, INL/RM/AD, Senior Aviation Advisor, to Steve Harris (COR) and George Arzente, INL/RM/AD/COR (Undated). ER, Vol. III, Annex 51.

[253] Memorandum from Stephen H. Harris, COR, DoS/INL/A, to Dyncorp, p. 4 (Oct. 2001). ER, Vol. III, Annex 49.

[254] *Ibid.* (emphasis in original).

2.132 In March 2002, the State Department criticized the "systemic failure in following of aircraft operational procedures" and complained about the "lack of importance placed on the safety program"[255]. Frighteningly, the State Department even found that the programme was "suffering" from "incomplete and inaccurate cartographic data"[256].

2.133 In short, Colombia's attempt to portray its aerial spraying programme as a well-run and professional operation is completely contradicted by the evidence, which shows that pilots are undisciplined, lack sufficient training and ignore operational requirements, especially in regard to preventing spray drift. These deficiencies provide further explanation for why they consistently release the spray mixture at unsafe speeds and altitudes in violation of the requirements/regulations described in the *Counter-Memorial*. As discussed below, the evidence shows that Colombia's "cowboy" pilots not only routinely flout the limits on flight speed and altitude of spray release, but also the requirements relating to droplet size, spray application rate and time of day when spraying is permitted.

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[255] Memorandum from Lowell E. Neese, SAA, DoS/INL/A (Bogota), to Stephen H. Harris, COR, DoS/INL/A, p. 5 (13 Mar. 2002). ER, Vol. III, Annex 44.

[256] Memorandum from David A. Campbell, COR, DoS/INL/A, to Dyncorp, PSD Manager, p. 19 (Feb. 2004). ER, Vol. III, Annex 48.

D. DROPLET SIZE

2.134 Aircraft speed and height of spray release are not the only factors that Ecuador and Colombia agree significantly contribute to drift. The size of the spray droplets is also a major contributor. Smaller droplets drift longer distances. Colombia agrees. It states in the *Counter-Memorial* that the amount of spray drift depends on the "initial size of the spray droplets"[257]. Indeed, Colombia's experts acknowledge that droplet size is one of the most important determinants of spray drift[258].

2.135 To defend the aerial spraying programme, Colombia has on numerous occasions represented that the droplet size of the spray mixture is large, since larger droplets are less likely to drift off-target. For example, an official communication from the Director of Colombia's DNE to the Ecuadorian Scientific and Technical Commission on 14 April 2004 represented that the "average drop" was 650 microns in size[259]. In September 2005, Colombia informed the IACHR that its technical parameters allowed spray droplets 300-

[257] CCM, Chap. 4, para. 4.68. *See also* CCM, Chap. 7, para. 7.17.

[258] Dobson Report, *op. cit.*, p. 523. CCM, Vol. I, Appendix. *See also* Hewitt et al., 2009, *op. cit.*, pp. 921-922. CCM, Vol. III, Annex 131-B.

[259] Note SARE-142, sent from the National Directorate of Narcotics of the Ministry of Interior and Justice of Colombia to the President of the Technical-Scientific Commission of Ecuador, p. 5 (14 Apr. 2004). EM, Vol. II, Annex 62.

1,500 microns (0.3 to 1.5 mm) in size[260], a range that is considered larger than "extremely coarse", the largest size specified by internationally accepted droplet size standards[261]. Based on information provided to them by Colombia, the authors of the 2005 Solomon study also reported that the size of the spray droplets were in the range of 300-1,500 microns[262]. Colombia's EMP allows droplets 300-1,000 microns in size[263].

2.136 However, the size of the droplets is much smaller than Colombia has claimed. Subsequent analysis in 2009, paid for by the Colombian and U.S. governments, dramatically revised the 2005 study's estimate, determining that the actual median droplet size is only 128-140 microns (0.138 to 0.140 mm)[264]. In other words, the *median* droplet size currently expected by Colombia is now half the estimated size that the 2005 Solomon study assumed as the *worst case* when it concluded that drift was unlikely to be a problem, and 50 percent smaller than the

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[260] Diplomatic Note Nº DDH. 58003 from the Colombian Foreign Ministry to the Executive Secretary of the Inter-American Commission on Human Rights, 18 Sept. 2005, p. 26. ER, Vol. V, Annex 154.

[261] Giles Report, *op. cit.*, p. 22. ER, Vol. II, Annex 2; American Society of Agricultural and Biological Engineers, Spray Nozzle Classification by Droplet Spectra, ANSI/ASAE S572.1 (Mar. 2009). ER, Vol. III, Annex 23.

[262] Solomon et al., 2005, *op. cit.*, p. 28. CCM, Vol. III, Annex 116.

[263] Resolution Nº1054 of 30 September 2003 of the Ministry for the Environment of Colombia, p. 173. CCM, Annex 50.

[264] Hewitt et al., 2009, *op. cit.*, pp. 921. CCM, Vol. III, Annex 131-B. The Agricultural Institute reported that Colombia has known its publicly cited droplet size range was inaccurate since at least 1999, when the Colombian Institute rejected the suggestion that the droplet size could be "between 300, 1000 and 1500 micros". Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 13 (23 Dec. 1999). ER, Vol. V, Annex 132.

smallest size permitted by the EMP. Moreover, the "fine to very fine" droplets admittedly sprayed by Colombia are dispersed in a spectrum[265]. In other words, a full 50 percent of the droplets are even smaller than the 128-140 micron median size. This is particularly problematic because droplets smaller than 150 microns are considered by Colombia's own experts to be particularly prone to spray drift[266]. As Dr. Giles explains, "[g]iven the importance of the smallest droplets in contributing to spray drift . . . the drift estimates based on the Colombian EMP droplet size values would severely under-predict actual drift"[267].

2.137 In fact, even Colombia's 2009 estimate overstates the actual size of the droplets. The 2009 study's authors predicated their droplet size estimate on the presumption (based on information provided to them by Colombia) that spraying is carried out in strict compliance with the aircraft speed and height requirements claimed by Colombia – a presumption that the flight data obtained from the U.S.

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[265] Hewitt et al., *op. cit.*, 2009, pp. 921, 923-925. CCM, Vol. III, Annex 131-B. *See also* Republic of Colombia, Colombian Agriculture and Livestock Institute, ICA Concepts Regarding A Report Issued by the Environmental Audit Techeca Ltda., p. 2 (1994). ER, Vol. V, Annex 122.

[266] Hewitt et al., 2009, *op. cit.*, p. 922. ("In this study, there was interest in the spray volume contained in relatively small droplets, i.e., those with diameter below 150 µm. This represents the finer droplets in the spray, which might present more of an exposure risk for downwind spray drift under unfavorable conditions".). CCM, Vol. III, Annex 131-B. *See also* Spray Drift Task Force, *A Summary of Aerial Application Studies*, p. 2 (1997). ER, Vol. III, Annex 10. ("The cut-off point of 141 microns or 150 microns has been established as a guide to indicate which droplet sizes are most prone to drift. However, it is important to recognize that drift doesn't start and stop at 141 microns. Drift potential continually increases as droplets get smaller than 141 microns, and continually decreases as droplets get bigger".)

[267] Giles Report, *op. cit.*, p. 22. ER, Vol. II, Annex 2.

government prove unfounded[268]; since the actual flight speeds and altitudes of spray release are very frequently much higher than allowed, the droplet size is necessarily even smaller than Colombia's experts presumed when they conducted their study.

2.138 Colombia's misrepresentation of droplet size is of fundamental importance. As Australia's Operating Principles in Relation to Spray Drift Risk put it, "[s]pray droplet size . . . is the most important single factor in spray drift risk. Smaller, lower mass droplets have greater potential for drifting off target"[269]. This view is corroborated by the pesticide industry's Spray Drift Task Force, which assessed the "relative role of the factors that affect spray drift" and determined that "[d]roplet size was . . . the most important factor"[270]. The Giles Report confirms that droplet size is one of the predominant factors influencing spray drift and off-site deposition of Colombia's spray mixture:

> "The size of the spray droplets has important implications for spray drift because it affects the droplet's terminal velocity and rate of evaporation. Smaller droplets have significantly slower terminal velocities and are displaced greater distances by cross winds than larger droplets. Likewise, smaller droplets have higher surface area to mass ratios and the effect of evaporation is to decrease their size more rapidly than larger droplets. As a result of

[268] *See supra* Chap. 2, paras. 2.91-2.97, 2.101-2.107.

[269] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 18 (15 July 2008). ER, Vol. III, Annex 22.

[270] Spray Drift Task Force, *A Summary of Aerial Application Studies*, p. 1 (1997). ER, Vol. III, Annex 10.

these two factors, smaller droplets are carried greater distances, resulting in greater spray drift"[271].

E. APPLICATION RATE

2.139 Colombia also violates the EMP's requirement governing the rate at which the spray mixture may be applied, contrary to its representations in the *Counter-Memorial*. In that regard, Colombia asserted that under no circumstances does it apply the spray mixture at a rate greater than 23.65 litres per hectare[272]. Like its representations regarding aircraft speed, altitude of release and droplet size, this one is false, too.

2.140 In fact, Colombia routinely exceeds the maximum allowable volume sprayed per hectare. For example, in 2002, the threshold was violated **12,184 times** in the area adjacent to Ecuador, representing **31 percent** of all spraying done that year in the border area[273]. Nor was this the only year when Colombia's spraying exceeded the threshold with great regularity. It did so **5,267 times** in 2006 (30 percent of all spraying in that year) and another **4,143 times** in 2007 (38 percent of all spraying in that year)[274].

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[271] Giles Report, *op. cit.*, p. 7. ER, Vol. II, Annex 2.

[272] CCM, Chap. 4, para. 4.62.

[273] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 22. ER, Vol. II, Annex 1.

[274] *Ibid.*

2.141 In total, Colombia violated its own limits on application rate at least **27,429 times** between 2000 and 2008[275]. This is **31 percent** of the documented spraying within 10 kilometres of Ecuador. (In fact, the number of violations is almost certainly much higher since Colombia failed to record data on application rates in 2000 and 2001 and the data was also unusable for 2004[276].)

2.142 Colombia has no plausible excuse for so frequently exceeding its own application rate limit. The *Counter-Memorial* states that Colombia's aircraft are fitted with specialized nozzles from which the spray is released, and that these nozzles "have an automatic calibration mechanism that determines the amount of spray mix to be released in order for the number of litres discharged per hectare to be kept constant at 23.65 litres per hectare"[277]. Elsewhere, the *Counter-Memorial* represents that "the spray mix is propagated through automatically calibrated nozzles that release the same amount of mix"[278]. Supposedly, the application rate is tracked after each spray mission; the *Counter-Memorial* states that a "detailed report of the day's operations" is:

> "prepared on the basis of the computerized system which records each spraying operation with its respective route, geo-referenced areas of application and the amount of spray mix released per

[275] *Ibid.*, p. 23.

[276] The data reported for 2004 is recorded in both metric and English units without specifying which units were used for any particular spray event, making it impossible to determine how many flights that year exceeded the requirement for volume.

[277] CCM, Chap. 4, para. 4.62.

[278] *Ibid.*, Chap. 7, para. 7.32.

> minute. This allows verification of the location of the places where the operations took place and quantification of the hectares sprayed. A record is signed by the Base Commander and the personnel involved in the operation"[279].

2.143 Colombia made the same representations to the authors of the 2005 Solomon study, who stated, based on information provided by Colombia, that "[t]he aircraft spray systems are electronically calibrated to disperse a specified quantity of spray mix per hectare, compensating for variances in ground speed"[280]. Solomon *et al.* relied on Colombia's assurances that sophisticated equipment ensures that only the precise amount of spray, and no more, is released: "These electronic spray controls are checked each day by technicians and also during the pilot's preflight inspection"[281]. Evidently, the controls were not checked very carefully (if they were checked at all). That is the only conclusion when Colombia violated its own limits on application rate – dumping more of the spray mixture on a given area along the border with Ecuador than its EMP allowed – tens of thousands of times between 2000 and 2008.

F. TIME OF DAY

2.144 Atmospheric conditions that Colombia concedes are prevalent at night are also conducive to wider spray drift. As a result, the *Counter-Memorial*'s

[279] *Ibid.*, Chap. 4, para. 4.64.

[280] Solomon et al., 2005, *op. cit.*, p. 28. EM, Vol. III, Annex 116.

[281] *Ibid.*

assertion that Colombia's spray missions occur only during the daytime is a significant misrepresentation that has important implications in regard to the distances travelled by the spray mixture it disperses along and near the border with Ecuador.

2.145 Specifically, Colombia represents at paragraph 7.27 that its "spray operations" occur only "after sunrise"[282]. Similarly, the authors of the 2005 Solomon study, based on information provided to them by Colombia, state that "[s]praying is only conducted in daylight hours before mid-afternoon"[283]. Thus, on at least two occasions – once in the *Counter-Memorial* and again to the authors of the 2005 Solomon study – Colombia has claimed that its aerial spraying is only done during the daytime.

2.146 Once again, Colombia's representations regarding the conditions in which spraying occurs are contradicted by the evidence. In fact, much of the aerial spraying takes place at night. This is evident from the U.S. Department of State's reports, which describe Colombia's "support and planning for *night spraying*"[284].

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[282] CCM, Chap. 7, para. 7.27.

[283] Solomon et al., 2005, *op. cit.*, p. 30. EM, Vol. III, Annex 116.

[284] Memorandum from Stephen H. Harris, COR, DoS/INL/A, to Dyncorp, PSD Manager, p. 11 (Dec. 2001) (emphasis added). ER, Vol. III, Annex 42.

2.147 The data collected by the spray planes confirm Colombia's night time spraying on a massive scale. Between 8 p.m. and 4 a.m., Colombia aerially dispersed the spray mixture at least **24,540 times** within 10 kilometres of the border with Ecuador, representing 22 percent of all spraying in the region[285]. If late afternoon spraying is included (4 p.m. to 8 p.m.) – which contradicts the 2005 Solomon study's presumption that spraying is only done "before mid-afternoon" – the number of violations rises to 47,262 and the percentage increases to 43 percent[286]. The falsity of Colombia's claim that aerial spraying only occurs "after sunrise" is graphically depicted in **Figure 2.10**.

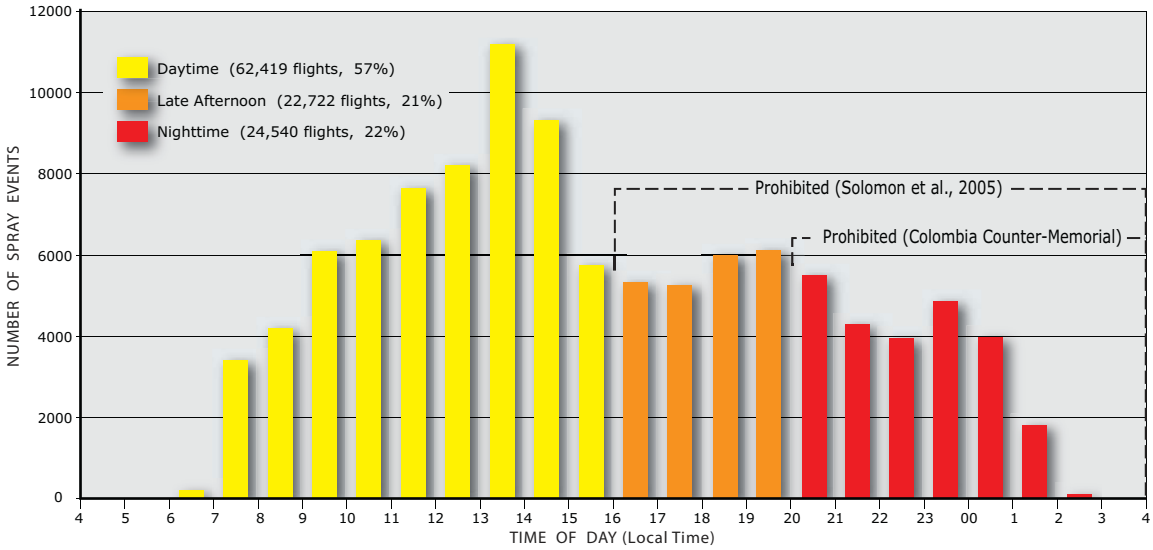

Figure 2.10. Time of Day of Spray Events

[285] Hansman & Mena Report, *op. cit.*, p. 23. ER, Vol. II, Annex 1.

[286] *Ibid.*, p. 24.

2.148 Colombia's night time operations greatly increase the propensity for the spray mixture to drift longer distances, including into Ecuador. According to the Solomon study (2005) – the main scientific evidence relied upon by Colombia – the purpose of the prohibition on spraying after "mid-afternoon" is "to ensure that conditions are appropriate for application"[287]. One reason for this is not difficult to fathom: spraying during darkness increases the likelihood of depositing the spray off-target because the pilot is unable to see the targeted area and has a stronger incentive to fly higher than otherwise in order to avoid objects that cannot be seen at night, such as unusually tall trees[288].

2.149 There is a technical reason why spraying at night increases spray drift: the meteorological condition known as a "thermal inversion", in which air at a higher altitude is warmer than air closer to the ground[289]. This condition, which frequently occurs at night in the border area between Colombia and Ecuador, is particularly favourable to spray drift. According to Australia's Operating Principles in Relation to Spray Drift Risk, the "potential for or presence of a surface temperature inversion condition is a very important factor in spray drift risk management"[290]. Because the "[n]ight-time hours" are "often associated

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[287] Solomon et al., 2005, *op. cit.*, p. 30. EM, Vol. III, Annex 116.

[288] Hansman & Mena Report, *op. cit.*, p. 23, n. 9. ER, Vol. II, Annex 1.

[289] *Ibid. See also* Menzie et al., 2009, *op. cit.*, p. 14. EM, Vol. III, Annex 158.

[290] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 24 (15 July 2008). ER, Vol. III, Annex 22.

with surface temperature inversion[s]", Australia's Operating Principles explain, "spray operations should not be conducted" at night[291]. Hansman & Mena further explain this phenomenon:

> "[D]uring daylight the atmosphere has better mixing and it is less likely that the spray will drift away from the intended target zone. At night the temperature of the surface is often lower than the warmer air above due to rational cooling. This results in a low altitude temperature inversion with a cool lower layer of air often only 10 or 20 meters thick. This phenomena will result in calm winds at night and ground fog if there is sufficient moisture in the air. The inversion stratifies the atmosphere and prevents mixing between the layers. As a consequence if the aircraft sprays in the warm layer above the inversion most of the spray (particularly the smaller droplets) will not hit the target area but will drift with the winds in the upper layer. This can result in advection or drift of the spray significant distances"[292].

The *Counter-Memorial* does not dispute that thermal inversions cause spray to drift long distances, or that they frequently occur along the border with Ecuador. But Colombia dismisses thermal inversions as a cause for concern because they occur only "at night", and the "spraying operations" take place exclusively "after sunrise"[293]. *Except for the more than* ***twenty-four thousand times*** *Colombia*

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[291] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 25 (15 July 2008). ER, Vol. III, Annex 22.

[292] Hansman & Mena Report, *op. cit.*, p. 23, n. 9. ER, Vol. II, Annex 1; *see also* Menzie et al., 2009, p. 14. EM, Vol. III, Annex 158. Dr. Giles further explains that "[a]n extremely undesirable meteorological condition in terms of increasing the risk of significant spray drift is when there is a temperature inversion and associated light and variable wind. In a temperature inversion, vertical dispersion of small spray droplets is inhibited because they remain trapped between layers of air. Thus, spray droplets can remain aloft and often become highly concentrated in relatively small packets or layers of air . . . . During the inversion or as the inversion weakens, the wind can easily displace these high concentrations of suspended small droplets over significant distances and in concentrations greatly exceeding those typical of normal, cross wind driven drift". Giles Report, *op. cit.*, p. 43. ER, Vol. II, Annex 2.

[293] CCM. Chap. 7, para. 7.27.

sprayed at night – all within 10 kilometres of the border with Ecuador[294]*!* To make matters even worse, on those 24,000+ occasions, Colombia also violated its limits on aircraft speed (165 mph) and altitude of dispersion (50 metres) more than 2,431 times[295]. Flying too fast and too high at night – a perfect trifecta of violations – virtually ensures widespread spray drift, including into Ecuador.

G. TEMPERATURE, HUMIDITY AND WIND CONDITIONS

2.150 Colombia acknowledges the importance of meteorological conditions for spray drift. At paragraph 4.68 of the *Counter-Memorial*, Colombia states that "[s]pray drift depends essentially on wind speed and direction, as well as on a number of other atmospheric factors including temperature, relative humidity and atmospheric stability"[296].

2.151 Higher temperature and lower humidity lead to greater evaporation of the spray droplets, reducing their size and making them more prone to drift[297]. As explained in the UN Food and Agriculture Organization Guidelines on Good Practice for Aerial Application of Pesticides, "[i]n conventional (water-based) spraying, high temperature, combined with low relative humidity will reduce

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[294] Hansman & Mena Report, *op. cit.*, p. 23. ER, Vol. II, Annex 1. Night was defined as 8 pm to 4 a.m. local time. *Ibid.*

[295] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 27. ER, Vol. II, Annex 1.

[296] CCM, Chap. 4, para. 4.68; *see also* CCM, Chap. 7, para. 7.17.

[297] Giles Report, *op. cit.*, pp. 26, 29. ER, Vol. II, Annex 2; Menzie et al., 2009, *op. cit.*, p. 15. EM, Vol. III, Annex 158.

droplet size through evaporation, which will increase the risk of drift"[298]. Colombia's experts acknowledge this risk, reporting that "at least half of the droplet volume could potentially be lost through evaporation"[299].

2.152 Wind speed and direction also play an important role in spray drift. As explained in the Giles Report, strong winds may carry spray droplets – particularly the small droplets dispersed by Colombia's spray planes – great distances, leading to deposition at 10 kilometres or more from the application site[300]. Less self-evidently, even low wind speeds can be conducive to drift. Australia's Operating Principles in Relation to Spray Drift Risk observe that "times of no wind (essentially below 3 km/hr) often precede or accompany periods of highly stable air and surface temperature inversion conditions both of which can greatly increase spray drift risk. Moreover, when wind resumes after periods of calm, its direction is not predictable"[301]. As a result, some regulatory

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[298] Food and Agriculture Organization of the United Nations, *Guidelines on Good Practice for Aerial Application of Pesticides*, p. 23 (2001). ER, Vol. IV, Annex 98. *See also* Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 22 (15 July 2008) ("For water based tank mixes, humidity and temperature affect droplet evaporation rates and can make a surprisingly large difference in drift deposits at longer downwind distances due to shrinkage in droplet size (and therefore mass)".). ER, Vol. III, Annex 22.

[299] Hewitt et al., 2009, *op. cit.*, pp. 925-926. CCM, Vol. III, Annex 131-B.

[300] Giles Report, *op. cit.*, p. 28. ER, Vol. II, Annex 2.

[301] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 21 (15 July 2008). ER, Vol. III, Annex 22.; *see also* Giles Report, *op. cit.*, pp. 27-28, 42-44. ER, Vol. II, Annex 2; Menzie et al., 2009, *op. cit.*, p. 14. EM, Vol. III, Annex 158.

authorities establish both minimum and maximum wind speeds for aerial spraying operations[302].

2.153 Recognizing the importance of these factors for affecting spray drift, Colombia's EMP includes specific parameters including a "maximum outside temperature during application" of 35ºC and a "maximum wind velocity" of 5 knots[303]. The *Counter-Memorial* assures the Court that "[t]hese parameters are strictly observed by the personnel involved in spraying operations"[304], and that wind conditions are "constantly monitored by the aircraft and if they are not within the parameters allowed, the mission is annulled or postponed"[305]. In paragraph 4.16, Colombia provides the blanket assurance that weather conditions are evaluated prior to each spray mission and that no spraying occurs when the meteorology favours spray drift:

> "Following an assessment of whether the minimum requisite security and weather conditions – including temperature, wind direction and speed and relative humidity – are present in the areas to be sprayed, the operations begin. Any alteration to these conditions entails the immediate cancellation of the spraying mission".

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[302] *See infra* Chap. 4, paras. 4.110-4.112.

[303] Resolution Nº1054 of 30 September 2003 of the Ministry for the Environment of Colombia, §§ 3.2.2.1. CCM, Vol. II, Annex 50. The EMP provides no minimum wind velocity, despite the prevalence of low wind conditions and thermal inversions in the border region.

[304] CCM, Chap. 7, para. 7.17.

[305] *Ibid.*, Chap. 7, para. 7.172.

2.154 Conspicuously, Colombia provides no data to demonstrate the truthfulness of these representations. It does not appear that Colombia even records or maintains data about temperature, wind or other meteorological conditions during spray flights. At least no evidence of this has been provided in the *Counter-Memorial*. Nor is any such data recorded by the spray planes themselves, or included within the information supplied to the U.S. Department of State and obtained by Ecuador[306]. In light of the fact that every other representation by Colombia about its alleged compliance with the operational requirements of the spray programme – regarding flight speed, altitude, type of aircraft, pilot capability and discipline, droplet size, application rate and night time spraying – has been proven false, Ecuador believes that Colombia's unsupported and self-serving assertions about compliance with temperature, wind and other such requirements do not merit the full faith and credit Colombia requests of the Court. To the contrary, the absence of data from Colombia to demonstrate its compliance with meteorological requirements constitutes an additional reason to doubt that it has succeeded in preventing spray drift into Ecuador[307].

Section III. Colombia's Prior Misrepresentations to Ecuador and Others

2.155 The *Counter-Memorial*, in asserting that Colombia never breaches the rules against spraying too fast or too high, that the volume of spray is perfectly

[306] Hansman & Mena Report, *op. cit.*, p. 30. ER, Vol. II, Annex 1.

[307] *See supra* Chap. 2, para. 2.82; Giles Report, *op. cit.*, pp. 26-30, 42-44. ER, Vol. II, Annex 2.

calibrated not to exceed a specified dose, and that the spray droplets are always sufficiently large, repeats prior misrepresentations that Colombia repeatedly made to Ecuador.

2.156 For example, on 14 April 2004, Colombia informed Ecuador via diplomatic note that the aerial spray programme is "carried out under the technical parameters established in the Environmental Management Plan for the Program for the Eradication of Illicit Crops by Aerial Spraying with Glyphosate (PECIG)"[308]. Colombia explicitly told Ecuador that the programme "includes operational parameters for spraying such as flight altitude, temperature, relative humidity, cloudiness, rain fall, type of nozzle, droplet size, and dosage, among others", and that "[i]f any of these parameters is not met, the spraying mission is cancelled"[309]. Colombia made similar representations in August 2004, when its delegation to the Binational Scientific and Technical Commission declared that "the technical conditions necessary to prevent the spray from reaching Ecuadorian territory shall be guaranteed"[310]. When Colombia made these representations to Ecuador, it surely knew that they were untrue: by August 2004, the speed limit of 165 mph had been violated at least **41,714 times**, the height

[308] Note NºSARE-142 from the Director of the National Narcotics Directorate of Colombia to the President of the Scientific and Technical Commission of Ecuador, para. 2.2, 14 Apr. 2004. CCM, Vol. II, Annex 13.

[309] *Ibid.*

[310] Minutes of the Fourth Meeting of the Joint Scientific and Technical Commission (2 Aug. 2004). EM, Vol. II, Annex 64.

limit of 50 metres had been breached **10,815 times**, and the application rate limit of 23.65 litres per hectare had been exceeded **14,654 times** in sprayings along the border with Ecuador[311]. And Colombia itself says its Ministry of the Environment was closely monitoring compliance with all of these parameters, as it was ordered to do by the Colombian Council of State[312].

2.157 On 20 December 2006, Colombia's Ministry of Foreign Affairs again assured Ecuador's Embassy in Colombia that the aerial spraying was being conducted in accordance with the operational requirements, and thereby preventing spray drift into Ecuador. On that occasion Colombia stated:

> "The Ministry of Foreign Affairs respectfully ensures to the Honourable Government of Ecuador that the Program for Eradication of Illicit Crops with Glyphosate – PECIG – is executed under the strictest technical measures which guarantee the protection of the environment and human health, also preventing the sprayed mixture to reach Ecuadorian territory"[313].

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[311] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 27. ER, Vol. II, Annex 1. Similarly, in November 2004, the Colombian Minister of Foreign Affairs wrote to the Director-General of the National Police of Colombia regarding Ecuador's concerns over the spray's transboundary impact in Ecuador. The Foreign Minister stressed it was essential to "guarantee[] compliance with the technical and operational conditions established for the environmental management plan for the eradication program that prevent any impact that may be derived from the spraying operations on non-target areas". Note Nº 001727 from the General Director of the National Police of Colombia to the Colombian Foreign Minister, 2 Nov. 2004. CCM, Vol. II, Annex 55. Colombia's Ministry of Foreign Affairs reiterated this view in September 2005 when it stated that "the spraying tasks with glyphosate herbicide (PECIG) are regulated by the relevant environmental rules that are strictly enforced in the Program's implementation". Aide-Mémoire "Aerial Spraying Issue with Ecuador", Ministry of Foreign Affairs of Colombia, Division of Multilateral Political Affairs, Sub-division for Drug Affairs, Sept. 2005. CCM, Vol. II, Annex 56.

[312] *See supra* Chap. 2, paras 2.80; *see also* CCM, Chaps. 4 and 7, paras. 4.26, 4.64, 7.172.

[313] Diplomatic Note from the Colombian Foreign Ministry to the Ecuadorian Embassy in Bogotá, 20 Dec. 2006. CCM, Vol. II, Annex 26.

Again, the data supplied by the spray planes say exactly the opposite.

2.158 Nevertheless, the empty assurances given to Ecuador were repeated by President Álvaro Uribe of Colombia in a letter to the President of Ecuador on 21 December 2006, in which Colombia's Head of State represented that the resumption of aerial spraying near the Ecuadorian border would "comply[] with all the technical requirements"[314]. In fact, by the time Colombia gave these assurances to Ecuador, the reality was that in the border area it had already violated the speed limit of 165 mph at least **54,336 times**, exceeded the height limit of 50 metres **13,114 times**, and violated the application rate limit of 23.65 litres per hectare **18,871 times**[315].

2.159 Colombia made these representations not just to Ecuador, but to international organizations as well. It did so, for instance, to the IACHR. Colombia informed the IACHR by note dated 18 September 2005 that the programme "is carried out in accordance with the Environmental Management Plan and in strict observance of environmental and human health care legislation in force"[316]. Colombia further represented to the Commission that:

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[314] Note from the President of Colombia to the President of Ecuador, 21 Dec. 2006. CCM, Vol. II, Annex 27.

[315] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 27. ER, Vol. II, Annex 1.

[316] Diplomatic Note Nº DDH. 58003 from the Colombian Foreign Ministry to the Executive Secretary of the Inter-American Commission on Human Rights, 18 Sept. 2005, § IV. CCM, Vol. II, Annex 19.

> "[s]praying must comply with a series of technical parameters (flight altitude, maximum herbicide release, droplet size, foreseen drift, temperature, relative humidity, and maximum wind speed) that guarantee that the mixture used is targeted exclusively towards the targeted eradication vegetation, that is to say, the illicit crops, therefore minimizing any possible effect due to drift"[317].

2.160 Based on Colombia's representations regarding its compliance with the operational conditions necessary to prevent spray drift, the IACHR declined to indicate provisional measures requested to protect people in Ecuador[318]. Colombia never informed the IACHR that, in reality, at the time of its submission to the Commission, the operational requirements it invoked in opposition to the request for provisional measures had already been violated many thousands of times. More specifically, by 18 September 2005 (the date of its submission) the speed limit of 140 mph had been violated at least **74,984 times**, the height limit of 25 metres had been breached **56,592 times**, and the application rate limit of 23.65 litres per hectare had been exceeded **15,223 times**[319].

2.161 In short, Colombia has a long history of misrepresenting its compliance with the operational requirements for its aerial spraying programme. The *Counter-Memorial* breaks no new ground in this regard.

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[317] *Ibid.*, § IV(c).

[318] Note Nº DSF40.1/3.1.3-4-00423 from the Executive Secretary of the Inter-American Commission on Human Rights to the Colombian Foreign Minister, 18 Nov. 2005. CCM, Vol. II, Annex 20.

[319] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 27. ER, Vol. II, Annex 1.

Section IV. Colombia's Failure to Stop Spraying in Buffer Zones and Other Protected Areas

2.162 Colombia praises itself in the *Counter-Memorial* for scrupulously respecting areas where it has agreed not to spray. In this section, Ecuador shows that this claim is untrue. The evidence shows that Colombia: (i) has twice identified "buffer zones" adjacent to the border with Ecuador, which it offered to treat as a "safety margin" in which no aerial spraying would be conducted in order to protect Ecuador against spray drift; and (ii) has nevertheless routinely carried out aerial spraying operations in those areas close to the border even when spray flights in those areas were supposedly "suspended". Colombia has also sprayed in very close proximity to border area reserves that Ecuador has set aside for vulnerable indigenous peoples, particularly the Awá and the Cofán, who have been especially impacted by Colombia's deposition of the spray mixture over their communities.

A. COLOMBIA'S SPRAYING IN BUFFER ZONES ESTABLISHED TO PROTECT ECUADOR FROM SPRAY DRIFT

1. Colombia Has Violated the 2.7-3.0 Kilometre "Safety Margin" It Previously Claimed Was Sufficient to Protect Ecuador from Spray Drift

2.163 The data recorded by the spray planes demonstrate that they routinely spray very close to the border, including in areas that Colombia said would be

off-limits to spraying in order to protect Ecuador[320]. On 14 July 2001, in responding to Ecuador's concerns about harm to Ecuadorian territory, Colombia represented that a "safety margin of 2.7-3.0 kilometres is believed to be enough"[321]. Ecuador did not then agree, nor has it ever subsequently, that a 3 kilometre buffer zone is sufficient to protect it from aerial spraying by Colombia. The point here is that Colombia did not observe its own self-described (and inadequate) "safety margin". Instead, it has routinely sprayed within 3.0 kilometres of the border. A total of **29,057** spray events were recorded in this zone between 2000 and 2008[322]. Clearly, this volume of spraying adjacent to Ecuadorian territory could not have been accidental.

2. Colombia Has Violated the 10 Kilometre Buffer Zone It Now Claims to Respect

2.164 Ecuador does not consider that a 3 kilometre buffer zone is sufficient to protect its people, animals and plants from harm caused by Colombia's spray programme. In Ecuador's view, the evidence supports a prohibition on aerial

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[320] In addition, the flight path records indicate that there have been at least 4 spray events conducted over Ecuadorian territory. Hansman & Mena Report, *op. cit.*, p. 13. ER, Vol. II, Annex 1.

[321] Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador, p. 3 (14 July 2001). EM, Vol. II, Annex 42.

[322] Hansman & Mena Report, *op. cit.*, p. 12. ER, Vol. II, Annex 1.

spraying by Colombia within 10 kilometres of Ecuadorian territory, as Ecuador has continually demanded of Colombia since 2001[323].

2.165 Colombia has never formally or definitively committed to refrain from spraying within 10 kilometres of the international border. To be sure, the *Counter-Memorial* describes a series of voluntary, non-permanent suspensions of spraying activity within that distance of the border beginning in 2005. From Ecuador's standpoint, these suspensions by Colombia: (i) constitute an implicit acknowledgement that 10 kilometres is the appropriate width of a buffer zone sufficient to protect Ecuador from spray drift; and (ii) show that a 10 kilometre buffer zone will not cause unacceptable consequences for Colombia[324].

2.166 Colombia maintains that it suspended spraying operations in the border province of Nariño (adjacent to Ecuador's province of Esmeraldas) from 27 December 2005 to 17 December 2006, and from 15 January 2007 to the present. In Putumayo (adjacent to Ecuador's province of Sucumbíos), Colombia states

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[323] Diplomatic Note 55416/2001- GM/SOI/SSN, sent from the Ministry of Foreign Affairs of Ecuador to the Ministry of Foreign Affairs of Colombia (2 July 2001). EM, Vol. II, Annex 41; EM, Chap. 3, para. 3.14.

[324] Moreover, the 10 kilometre buffer zone has been endorsed by international observers. Soon after the January 2007 suspension, the UN Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health applauded Colombia's decision. He "welcome[d] the fact that aerial spraying of coca crops in the 10-km border zone had ceased in February 2007" and further welcomed the Colombian Vice President's statements "that manual eradication tends to be more effective than aerial spraying". *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, U.N. Doc. A/HRC/7/11/Add.3, para. 16 (4 Mar. 2007). EM, Vol. II, Annex 31.

that it suspended spraying from 1 January 2005 to 24 September 2005, from 11 December 2005 to 11 December 2006 and from 22 January 2007 to the present[325]. Ecuador wishes that this were so.

2.167 Despite Colombia's assurances, the flight data generated by the spray planes and furnished to the U.S. Department of State show that aerial spraying inside the 10 kilometre buffer zone was carried out thousands of times while the suspensions described above were supposedly in effect. For example, paragraph 5.90 of the *Counter-Memorial* states that the suspensions beginning in January 2007 have been "continuously maintained"[326]. However, Colombia has conducted at least 5,287 spray events within the 10 kilometre buffer zone in Nariño province since that date. In fact, Colombia's spray planes have deposited at least 20,630 gallons (78,093 litres) of the spray mixture within 10 kilometres of Ecuador's border since 1 February 2007[327]. The total number of spray flights during Colombia's purported suspensions in both Nariño and Putumayo provinces exceeds 6,046[328].

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[325] CCM, Chaps. 5, 7 and 10, paras. 5.62-5.63, 5.67, 5.71, 5.90, 7.3, 10.9; Report by the Anti-Narcotics Direction of the Colombian National Police (DIRAN), pp. 310-311, 8 Feb. 2010. CCM, Vol. II, Annex 67.

[326] CCM, Chap. 5, para. 5.90; *see also* CCM, Chap. 7, para. 7.3.

[327] Hansman & Mena Report, *op. cit.*, p. 13. ER, Vol. II, Annex 1. Because Ecuador does not have the precise calendar dates associated with each spray event, these figures represent spraying within 10 kilometres of Ecuador's border beginning on 1 February 2007 to the present. *Ibid.*, n. 4.

[328] *Ibid.*, p. 13.

2.168 Colombia's misrepresentations regarding the suspension of spraying within the 10 kilometre buffer zone do not end there. On 11 November 2010, in response to allegations by an indigenous organization that were published by several news outlets[329], the Colombian Ministry of Foreign Affairs issued a Press Release that stated:

> "With respect to the information published today in the Ecuadorian newspaper La Hora regarding alleged aerial aspersions over illicit crops in the boundary area with Colombia, the National Government allows itself to specify:
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> 1. Since the month of January 2006, it has strictly complied with the matters agreed by the Ministries of Foreign Affairs of Colombia and Ecuador on 7 December 2005 in Quito, with regard to suspending the aspersions in the boundary area with Ecuador"[330].

2.169 This statement by the Colombian Ministry of Foreign Affairs – that spraying within the 10 kilometre buffer zone has been suspended since January 2006 – directly contradicts the *Counter-Memorial*, which acknowledges that the 7 December 2005 agreement made by the Colombian Minister of Foreign Affairs as a "gesture of goodwill towards Ecuador" was broken by a resumption in spraying in both Nariño and Putumayo provinces between December 2006 and January

[329] "Colombia Fumigates Again", LA HORA (Quito, 11 Nov. 2010). ER, Vol. IV, Annex 93; "Colombian Government Violates Pact and Fumigates with Glyphosate", VOCES.ORG (San Salvador, 10 Nov. 2010). ER, Vol. IV, Annex 92.

[330] Republic of Colombia, Ministry of Foreign Affairs, Press Release (11 Nov. 2010). ER, Vol. V, Annex 156.

2007[331]. In fact, the flight data show that the period between December 2006 and January 2007 was a period of heavy spraying in the border region: a total of 22,555 spray events were conducted within 10 kilometres of Ecuador's border[332]. As discussed in Chapter 8, these serious discrepancies between Colombia's words and deeds demonstrate the need for a binding Court order requiring Colombia not to spray within 10 kilometres of Ecuadorian territory[333].

B. COLOMBIA'S AERIAL SPRAYING IN CLOSE PROXIMITY TO ECUADOR'S INDIGENOUS RESERVES

2.170 Colombia has not only sprayed within its self-described buffer zones, it has done so in very close proximity to highly sensitive areas in Ecuador, specifically reserves set aside to protect the vulnerable communities of the Awá and Cofán indigenous peoples living on their traditional lands. Colombia has done so despite its imposition of a putative no-spray zone around sensitive areas such as these.

2.171 In November 2001, Colombia's Environment Ministry imposed a 2,000 metre buffer zone around national parks, in view of the likelihood of harm were

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[331] CCM, Chap. 5, para. 5.109(6). *See also ibid.*, Chaps. 2 and 5, paras. 2.41, 5.62, 5.71; EM, Chap. 3, paras. 3.3, 3.53-3.54, 3.64.

[332] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 27. ER, Vol. II, Annex 1. Ecuador cannot verify Colombia's statements regarding compliance with the 10 kilometre buffer zone in November 2010 because the data in Ecuador's possession ends in January 2009.

[333] *See infra* Chap. 8, paras. 8.3, 8.14-8.15, 8.19.

spraying to occur in closer proximity[334]. The Environment Ministry explained that it was necessary to protect such sensitive environments "given the strategic ecosystem's importance, as well as environmental characteristics" and "based on preventative action principle"[335]. The Ministry further explained:

> "From the functionality perspective of the eco-systems found in the parks, it should be taken into account that their bordering areas, more than artificial borders are borders that interrelate with organisms (flora and fauna) and natural resources contained within and without its borders, therefore impacts sustained by the surrounding areas may be harmful to ecosystems, resources and species located within the natural parks considered of value, not only for the country, but also for humanity"[336].

2.172 The Ministry of Environment further observed that it "based its determination concerning the 2000 meter security zone surrounding the Natural National Park system on the risks associated with the drift effects of the Glyphosate when it is sprayed over illicit crops, as well as the fragility of the eco-systems found in these areas, and their strategic importance from a social, economic and ecological standpoint"[337]. For Ecuador, a 2 kilometre buffer zone is terribly insufficient, as discussed above. The point here is that even the

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[334] Republic of Colombia, Ministry of Environment, *Resolution No. 1065*, art. 5(d) (26 Nov. 2001). EM, Vol. II, Annex 15. In so ruling, the Ministry rejected a 1,000 metre buffer zone that had been proposed by the DNE.

[335] Republic of Colombia, Ministry of Environment, *Resolution No. 108*, p. 5 (31 Jan. 2002). ER, Vol. V, Annex 141. ("As for the parks' protected zones under the scope of the Natural National Park system's Special Administrative Unit, this Ministry considered a 2,000 meter long zone".)

[336] Republic of Colombia, Ministry of Environment, *Resolution No. 108*, p. 5 (31 Jan. 2002). ER, Vol. V, Annex 141.

[337] *Ibid.*

inadequate 2 kilometre safety zone decreed by Colombia in regard to ecologically sensitive areas was ignored, with particular consequence for the indigenous communities living in remote areas along the Ecuador-Colombia border.

1. Cofán-Bermejo Ecological Reserve

2.173 The Cofán-Bermejo Ecological Reserve covers 55,451 hectares of tropical lowland rainforest in northeastern Ecuador along the border with Colombia[338]. It is managed by the Cofán people themselves, in cooperation with the Government of Ecuador, and is intended to protect their unique cultural and biological heritage[339]. Approximately one-fourth of Ecuador's indigenous Cofán population – about 320 people – reside in the Cofán-Bermejo Ecological Reserve, making it a critical area for the protection of this vulnerable indigenous group[340].

2.174 The Cofán people's stewardship of the Reserve has caused its well-preserved forests to retain exceptionally high levels of plant and animal diversity[341]. For example, the forest is estimated to contain upwards of 2,000 plant species, including at least 15 endemic plants (*i.e.*, species that exist nowhere

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[338] Balslev Report, *op. cit.*, p. 32. ER, Vol. II, Annex 4.

[339] *Ibid.*; Norman E. Whitten, Jr., Ph.D., Dr. William T. Vickers, Ph.D. & Michael Cepek, Ph.D., Tropical Forest Cultural Ecology and Social Adaptation in the Ecuadorian Border Region with Colombia, pp. 19-20 (Jan. 2011) (hereinafter "Whitten et al. Report"). ER, Vol. II, Annex 5.

[340] Balslev Report, *op. cit.*, p. 32. ER, Vol. II, Annex 4.

[341] Balslev Report, *op. cit.*, pp. 32-33. ER, Vol. II, Annex 4; Whitten et al. Report, *op. cit.*, pp. 19-20. ER, Vol. II, Annex 5.

else on earth)[342]. As explained by botanical and anthropological experts intimately familiar with the area, apart from the biological significance of these species, many are used by the Cofán for cultural and/or medicinal purposes[343]. The Reserve is also rich in animal life; a single scientific survey conducted in 2002 recorded 399 bird species, 42 species of large mammals and 31 species of amphibians and reptiles[344].

2.175 The spray flight data demonstrate that Colombia has frequently conducted aerial spraying within 2 kilometres of this sensitive area. In fact, **1,021 spray lines** were recorded within 2 kilometres of the Cofán-Bermejo Reserve between 2000 and 2008[345]. Within 10 kilometres of the Reserve – a more suitable safety zone – Colombia sprayed more than **12,398 times** during the same period[346].

2.176 In Chapter 3, Ecuador describes in detail how the Cofán people have been harmed by Colombia's spraying in areas adjacent to the Cofán-Bermejo Reserve[347].

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[342] Balslev Report, *op. cit.*, p. 33-34. ER, Vol. II, Annex 4; Whitten et al. Report, *op. cit.*, p. 19. ER, Vol. II, Annex 5.

[343] Balslev Report, *op. cit.*, p. 33. ER, Vol. II, Annex 4; Whitten et al. Report, *op. cit.*, p. 22. ER, Vol. II, Annex 5.

[344] Balslev Report, *op. cit.*, p. 34. ER, Vol. II, Annex 4.

[345] Hansman & Mena Report, *op. cit.*, p. 14. ER, Vol. II, Annex 1.

[346] *Ibid.*

[347] *See infra* Chap. 3, Section I(B)(1): The Kichwa and Cofán of Sucumbíos.

2. *Awá Indigenous and Forest Reserve*

2.177 The Awá Indigenous and Forest Reserve (*Reserva Étnico Forestal Awá* in Spanish) is a 120,000 hectare area located immediately adjacent to the Colombian border in the Esmeraldas and Carchi Provinces of Ecuador[348]. The Reserve is comprised of well-conserved primary forest, including several different ecosystems ranging from the lowland Chocó rain forest to humid mountain and cloud forests at the highest elevations[349]. The Reserve is home to approximately 3,000 indigenous Awá who depend on its forest resources for their daily survival[350]. It also harbours remarkable biodiversity, including the Brown-Headed Spider monkey (*Ateles fusciceps)*, the Ecuadorian Sac-Winged Bat (*Balantiopteryx infusca)*, Jaguar (*Panthera onca)*, Neotropical Otter (*Lontra longicaudis)*, and the Spectacled Bear *(Tremarctos ornatus)*, among the many the animal species that inhabit the Reserve[351]. As described by Whitten et al., the region inhabited by the Awá in Ecuador on the border of Colombia "is one of the richest, wettest, high biodiversity rain-forest regions of the world"[352].

2.178 Colombia's disregard for the 2 kilometre safety zone that its Ministry of Environment determined was necessary to protect sensitive areas is evidenced by

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[348] Balslev Report, *op. cit.*, p. 29. ER, Vol. II, Annex 4.

[349] *Ibid.*

[350] Whitten et al. Report, *op. cit.*, pp. 45, 47. ER, Vol. II, Annex 5.

[351] Balslev Report, *op. cit.*, pp. 29-30. ER, Vol. II, Annex 4.

[352] Whitten et al. Report, *op. cit.*, p. 45. ER, Vol. II, Annex 5.

the flight data. Colombia sprayed **57 times** within 2 kilometres of the Reserve between 2000 and 2008[353]. Colombia also sprayed **10,913 times** within 10 kilometres of the Reserve, the buffer zone which Ecuador has consistently maintained is necessary to protect its territory, including biologically and culturally sensitive areas such as the Awá Indigenous and Forest Reserve[354].

2.179 The harm that has been inflicted on the Awá by the spraying programme is described in detail in Chapter 3[355].

C. COLOMBIA'S SPRAYING IN CLOSE PROXIMITY TO ECUADOR'S NON-INDIGENOUS BORDER COMMUNITIES

2.180 Ecuador's indigenous communities are not the only ones subjected to Colombia's aerial spraying 2 kilometres or less from their homes, even though in 2001 Colombia enacted regulations prohibiting spraying within 2 kilometres of human settlements. For example, Colombia sprayed **719 times** between 2000 and 2008 within 2 kilometres of the Ecuadorian community of Mataje, located in Esmeraldas Province[356].

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[353] Hansman & Mena Report, *op. cit.*, p. 14. ER, Vol. II, Annex 1.

[354] *Ibid.*

[355] *See infra* Chap. 3, Section I(D)(1): The Awá of Esmeraldas.

[356] Hansman & Mena Report, *op. cit.*, p. 14. ER, Vol. II, Annex 1.

2.181 Other Ecuadorian communities on the Colombian border have experienced a similar intensity of spraying. For example, Colombia sprayed **174 times** within 2 kilometres of the community of Puerto Mestanza, located in Ecuador's Sucumbíos Province[357].

2.182 It is not coincidental that the residents of Mataje and Puerto Mestanza, like the residents of other Ecuadorian border communities in very close proximity to where Colombia conducts aerial spraying, have experienced serious harm to their health, crops, animals and livelihoods, as detailed in Chapter 3[358].

Section V. The Spray Mixture Reaches Ecuador in Quantities Sufficient to Cause Serious Harm

2.183 In this section, Ecuador refutes Colombia's core contention, which it argues throughout the *Counter-Memorial*, that the spray programme cannot cause harm in Ecuador because the spray mixture does not drift more than a few metres from the target areas where it is released[359]. The evidence overwhelmingly contradicts Colombia's argument. It shows that Colombia's pervasive violations of its own requirements to prevent spray drift have had a dramatic impact on

[357] Hansman & Mena Report, *op. cit.*, p. 14. ER, Vol. II, Annex 1.

[358] *See infra* Chap. 3, Sections I and II.

[359] *See, e.g.*, CCM, Chap. 7, para. 7.3 ("[T]aking into account the scientific evidence on the limited effect of drift and the strict technical parameters under which the spraying operations are carried out in Colombia – including the observance of 100m exclusion strips along watercourses – no damage could have occurred in Ecuadorian territory".). *See also ibid.*, paras. 7.16-7.30, 7.33, 7.161.

Ecuador. In particular, it shows the manner in which the spraying is done, including the height at which the spray mixture is released, the aircraft speed and application rate, the droplet size, the night time spraying, the disregard of temperature and wind conditions, combined with the frequency with which areas near Ecuador's border are sprayed and the especially toxic nature of the chemical cocktail, all assure that the spray mixture is deposited far into Ecuador in amounts which exceed what is needed to cause harm.

A. COLOMBIA'S MISREPRESENTATIONS REGARDING THE EXTENT OF SPRAY DRIFT

2.184 Colombia has consistently represented to Ecuador and to the international community, and now represents to the Court[360], that off-target drift from its spray operations is minimal.

2.185 Starting in the early years of the spray programme, Colombia's DNE – the agency responsible for carrying out the spray operations – was warned about the potential for significant off-target drift. A report issued by the Colombian Agriculture Institute ("ICA") in 1999 in response to the DNE's draft EMP concluded that the "permissible drift" reported by the DNE of less than 2 to 5

[360] *See* CCM, Chap. 7, para. 7.3. *See also* CCM, Chap. 7, paras. 7.93, 7.170.

metres was "impossible" given the "height and speed" of the spray planes[361]. The ICA further explained that the 80 percent rate of recovery reported by the DNE was "inconsistent" given the "considerable speed and height of operation"[362].

2.186 This assessment regarding the danger of drift was confirmed by a study dated July 2004 by Sociedad Las Palmas Ltda., a consulting firm commissioned by the Colombian government to evaluate the drift associated with different spray mixtures[363]. The Las Palmas study concluded that an astounding *72% of the spray mixture containing Cosmo-Flux drifted off-target*[364]. Indeed, the mixture with Cosmo-Flux had the *worst drift* of all the mixtures that were assessed, prompting its authors to recommend that Colombia cease using that adjuvant in the spray, a recommendation that was ignored[365].

2.187 These warnings were not just disregarded by Colombia. DNE and Colombia's Ministry of Foreign Affairs communicated precisely the opposite message to Ecuador. In a diplomatic note sent to Ecuador on 14 July 2001,

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[361] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 14 (23 Dec. 1999). ER, Vol. V, Annex 132.

[362] *Ibid.*, p. 13.

[363] Las Palmas Report, *op. cit.*, pp. 4-5. ER, Vol. III, Annex 15.

[364] *Ibid.*, pp. 40-41, 107. ER, Vol. III, Annex 15; *see also* Giles Report, *op. cit.*, p. 46. Annex 2.

[365] The Las Palmas study concluded that another available adjuvant, which had the same level of effectiveness at killing coca plants, resulted in a much lower off-target deposition of approximately 30%. Las Palmas Report, *op. cit.*, pp. 40-41, 104-107. Nevertheless, Colombia persisted in using Cosmo-Flux and even claims that it is a "drift control agent". *See* CCM, Chap. 4, paras. 4.42, 4.51-4.56.

Colombia's Ministry of Foreign Affairs represented that strict operational parameters "guarantee a negligible drift, that is, less than 5 meters"[366]. Approximately three years later, a letter from the Director of DNE to the Ecuadorian Scientific and Technical Commission dated 14 April 2004 repeated these limited estimates of spray drift, stating that "maximum drift" is estimated to be 12 metres[367]. On 18 September 2005, Colombia made the same representation to the IACHR, stating that the maximum extent of drift was 12 metres[368]. Colombia continued to maintain these gross misrepresentations of spray drift as recently as 2007, claiming in a Position Statement to the Binational Scientific and

[366] Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador, p. 3 (14 July 2001). EM, Vol. II, Annex 42. A similar estimate is included in Colombia's Environmental Management Plan issued on 30 September 2003, which states that "Foreseen Drift" is less than 5 metres. Resolution Nº 1054 of 30 September 2003 of the Ministry for the Environment of Colombia, p. 173. CCM, Vol. II, Annex 50. As discussed in Chapter 4, the current version of the EMP was finally adopted by the Ministry of Environment after a long battle with the DNE. It appears that the DNE ultimately won.

[367] Note No. SARE-142 from the Director of the National Narcotics Directorate of Colombia to the President of the Scientific and Technical Commission of Ecuador, p. 33 (14 Apr. 2004). CCM, Vol. II, Annex 13. As discussed in the Giles Report, this estimate was based on an overly simplistic spray drift calculation, despite the availability of more sophisticated models such as AGDISP since the 1980s. Colombia's calculation took into account a mere three variables. Worse yet, the variables – a maximum spray height of 25 metres, an average droplet size of 650 microns and a wind speed of 4.8 km/hr (1.3 m/s) – do not reflect the actual conditions of application. Thus, the calculation presented by Colombia to Ecuador's Scientific and Technical Commission leads to a gross underestimation of spray drift. Giles Report, *op. cit.*, pp. 45-46. ER, Vol. II, Annex 2.

[368] Diplomatic Note No. DDH. 58003 from the Colombian Foreign Ministry to the Executive Secretary of the Inter-American Commission on Human Rights, p. 26, Table No. 1, 18 Sept. 2005 (indicating that the "permissible drift" is less than 12.3 metres). ER, Vol. V, Annex 154.

Technical Commission that "under adverse parameters of maximum wind and application altitude" drift would extend 12 to 24.1 metres[369].

2.188 As explained below, Colombia misrepresented the extent of spray drift – not by metres but by *kilometres*. In fact, an internationally-accepted spray drift model, which is relied upon by Colombia in its *Counter-Memorial* – and which has been available to Colombia since the inception of spray operations near Ecuador's border in 2000 – demonstrates that the amount of spray deposited as far as 10 kilometres into Ecuador is more than sufficient to cause serious harm[370].

B. SPRAY DRIFT MODELING

2.189 The *Counter-Memorial* relies upon spray drift modeling commissioned by the Colombian and U.S. governments in 2009 purportedly to show that spray cannot reach Ecuador. For example, it states at paragraph 7.20, in reliance on this drift modeling, that the "effects of spraying" are "negligible beyond 120 meters even for those plants most sensitive to the spray mixture"[371]. This statement is based on the results of a spray drift study conducted by Dr. Andrew Hewitt and

[369] Republic of Colombia, Position Statement by Colombia to the Binational Scientific and Technical Commission in Relation to the Destruction in Colombia of Illicit Crops in the Frontier Zones with Ecuador, p. 23 (8 June 2007). ER, Vol. V, Annex 155.

[370] *See infra* Chap. 2, paras. 2.200-2.203; Giles Report, *op. cit.*, pp. 4, 47-48. ER, Vol. II, Annex 2; Weller Report, *op. cit.*, pp. 17-25. ER, Vol. II, Annex 3.

[371] CCM, Chap. 7, para. 7.20 (citing Hewitt et al., 2009, *op. cit.*, pp. 923, 925, 929. CCM, Vol. III, Annex 131-B).

colleagues, attached to Colombia's *Counter-Memorial* as Annex 131-B. In his study, Dr. Hewitt used an internationally accepted spray drift model called AGDISP, which was "developed and validated by NASA, the U.S. Forest Service, U.S. Army, Spray Drift Task Force, and others over several decades for aerial forestry and agricultural spray applications"[372]. He compared the results obtained by use of that model – an estimated deposition rate in grams per hectare of glyphosate acid equivalent (a.e.) – to dose-response thresholds for plants. Based on this comparison, Dr. Hewitt concluded that plants more than 50 to 120 metres from the spray application site would not be exposed to a sufficient amount of spray to be harmed[373].

2.190 Ecuador has no quarrel with the use of the AGDISP model as a useful predictive tool. Nor does Ecuador dispute that comparing an estimated deposition rate with known dose-response values for plants is a sound way to evaluate the likelihood of harm to those plants. However, as described in greater detail in the paragraphs that follow, the problem with Colombia's modeling is that by definition, models rely on a set of factual assumptions, and the assumptions that were fed into Dr. Hewitt's model are demonstrably wrong[374]. They are based entirely on Colombia's representations, now proven to be false, that it strictly

[372] Hewitt et al., 2009, *op. cit.*, p. 921 (internal citations omitted). CCM, Vol. III, Annex 131-B.

[373] *Ibid.*, p. 921, 928.

[374] *See infra* Chap. 2, paras. 2.191-2.197; Giles Report, *op. cit.*, pp. 9-42, 47. ER, Vol. II, Annex 2.

complied with all operational requirements for avoiding spray drift contained in the EMP and boasted of in the *Counter-Memorial*. When the false assumptions are corrected to reflect how the aerial spray programme is actually conducted, the model employed by Colombia actually *makes Ecuador's case*: it shows that significant amounts of the spray mixture drift long distances from the place of release, and thus reach far into Ecuador, where they are of sufficient toxicity to cause significant harm in Ecuador[375].

1. Flaws in Colombia's Modeling

2.191 As indicated, the fatal flaw in Colombia's modeling is that it assumes that the aerial spray programme complies with its own operational requirements, including those relating to aircraft speed and altitude. As demonstrated above, however, these assumptions are wrong. In reality, Colombia disregards those requirements and sprays with aircraft travelling much faster and higher than allowed. For example, Colombia's modeling assumes that its planes fly at speeds ranging from 226 km/hr to 333 km/hr (140 to 207 mph)[376], but in reality, they frequently fly much faster; speeds above 333 km/hr have been recorded for more than 11,113 flights between 2000 and 2008 within 10 kilometres of the border

[375] *See infra* Chap. 2, paras. 2.199-2.202; Giles Report, *op. cit.*, pp. 9-42, 47. ER, Vol. II, Annex 2; Weller Report, *op. cit.*, pp. 17-25. ER, Vol. II, Annex 3.

[376] Hewitt et al., 2009, *op. cit.*, p. 923. CCM, Vol. III, Annex 131-B

with Ecuador[377]. As a result, the higher flight speeds disperse spray droplets that are much smaller, and which drift much longer distances, than would otherwise be the case[378]. Likewise, despite the fact that Colombia's modeling assumed that the spray is released at a height of 30.48 metres[379], it is invariably released at far higher altitudes. The data show more than 81,106 of the 114,525 spray events (71%) within 10 kilometres of Ecuadorian territory during which the spray mixture was released at altitudes higher than those assumed in Colombia's drift modeling[380]. This, as shown, also increases the spray's propensity to drift[381].

2.192 Nor is the model's assumption about application rate accurate. Although the EMP requires an application rate of no greater than 23.65 litres per hectare, Colombia frequently exceeds that limit[382]. Dr. Hewitt, in fact, not only underestimated the real application rate, and thus the deposition of the spray mixture, he even misestimated the application rate required by the EMP by a factor of 2.2. Rather than using 23.65 as the application rate for the total tank mix, as Colombia's spray programme dictates, Dr. Hewitt describes his model

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[377] Hansman & Mena Report, *op. cit.*, p. 20. ER, Vol. II, Annex 1.

[378] *See supra* Chap. 2, para. 2.97; Hansman & Mena Report, *op. cit.*, p. 20. ER, Vol. II, Annex 1; Giles Report, *op. cit.*, pp. 6-8, 20-21. ER, Vol. II, Annex 2.

[379] Hewitt et al., 2009, *op. cit.*, p. 923. CCM, Vol. III, Annex 131-B.

[380] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 28. ER, Vol. II, Annex 1.

[381] Giles Report, *op. cit.*, pp. 16-20. ER, Vol. II, Annex 2.

[382] *See supra* Chap. 2, paras. 2.140-2.141; Hansman & Mena Report, *op. cit.*, p. 23. ER, Vol. II, Annex 1.

input for the spray volume rate as "10.4 L/ha (1.11 gallon/acre) total tank mix for coca sprays"[383], *i.e.*, less than half of the maximum allowable rate under the EMP.

2.193 These errors are compounded by another serious flaw: inexplicably, Colombia's modeling assumes that the spray planes carry out *only one line of aerial spraying*. In fact, the flight data recorded by the spray planes and obtained from the U.S. Department of State demonstrate that the spray is released in numerous tightly packed parallel lines[384]. **Figure 2.11** is a representative sample of an area sprayed adjacent to Ecuador's Sucumbíos Province in September 2002; the two inset boxes show magnified views of 1 square kilometre areas where Colombia sprayed. As the Court can see, there were over **20** parallel spray lines in those areas alone. The chemical spray from each individual line drifts and contributes to deposition in Ecuador[385]. This is depicted by **Figure 2.12**, which illustrates the cumulative deposition downwind of increasing numbers of spray lines: two spray lines deposit nearly twice as much herbicide as a single spray line; three lines deposit almost triple the amount; and ten lines result in close to a ten-fold increase in deposition. When one considers the large number of parallel

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[383] Hewitt et al., 2009, *op. cit.*, p. 923. CCM, Vol. III, Annex 131-B; *see also* Giles Report, *op. cit.*, pp. 24-25. ER, Vol. II, Annex 2.

[384] Hansman & Mena Report, *op. cit.*, p. 29. ER, Vol. II, Annex 1.

[385] Giles Report, *op. cit.*, p. 9 ("Many aerial spraying operations, including those conducted in Colombia, involve multiple parallel flights to cover the target area. Physically and analytically, each flight is an independent event, i.e., the aircraft wake and the droplets released from one pass dissipate and do not affect the motion of droplets from subsequent passes. Therefore, the total spray deposition at any point downwind from multiple passes is an accumulation of the spray deposition from each individual spray pass".) (internal citation omitted). ER, Vol. II, Annex 2.

Density of Parallel Spray Lines Within 10 Kilometres of Ecuador's Border During a Single Month (September 2002)

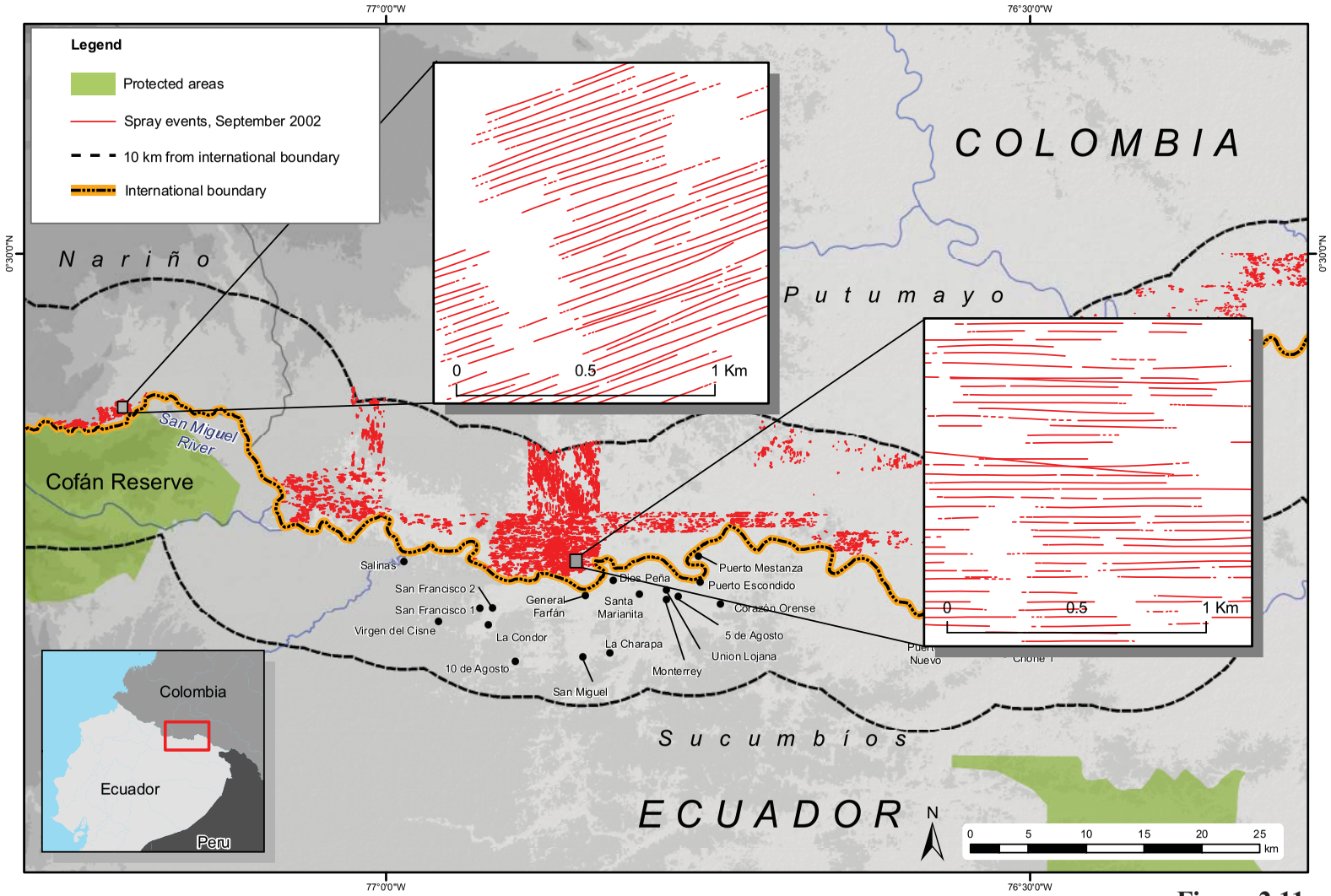

Figure 2.11

Cumulative Impact of Drift From Multiple Spray Lines

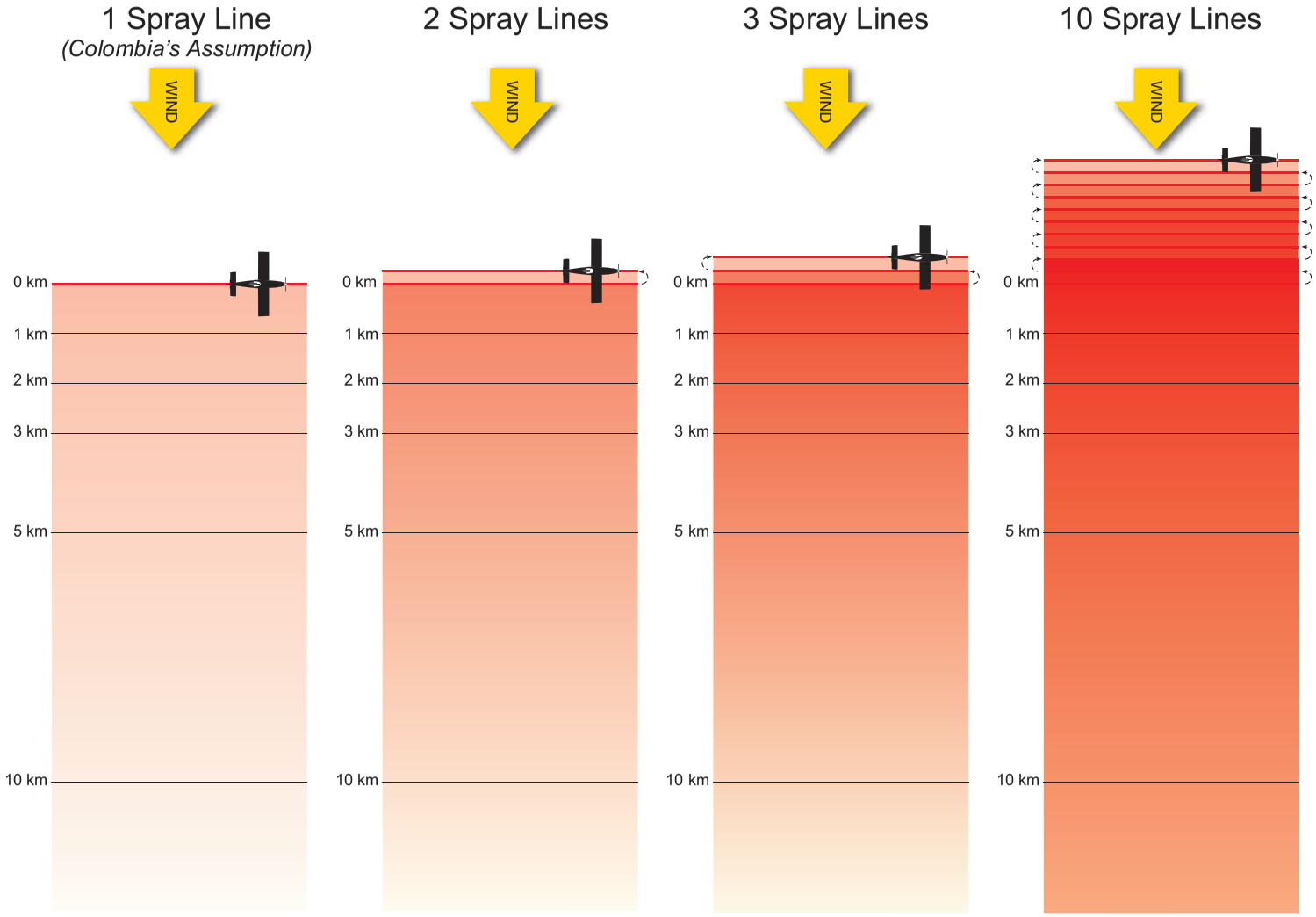

Figure 2.12

lines depicted on the map in **Figure 2.11** (over 20 lines in the inset boxes alone) the multiplicative effect of Colombia's spraying practices can be readily appreciated.

2.194 Nevertheless, Colombia's modeling only accounts for a single spray line, ignoring the dozens more that were frequently sprayed. As a result, it significantly underestimates the amount of spray deposited downwind[386]. Indeed, it is particularly odd that the Hewitt report commissioned by Colombia fails to take account of the impact of multiple spray lines since the AGDISP model he used includes a feature designed to calculate the effect of multiple spray lines[387]. Dr. Hewitt apparently chose not to apply this feature or otherwise account for the multiple spray lines that regularly characterised Colombia's spray operations. This is all the more remarkable since previous studies authored by Dr. Hewitt have taken into account the effect of multiple spray lines[388].

2.195 Further undermining the accuracy of Colombia's modeling: its exposure analysis fails to consider the fact that the spray mixture used by Colombia includes Cosmo-Flux, a powerful chemical that is added to increase the spray's

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[386] *Ibid.* ("Using only a single pass to determine drift deposition when multiple passes were made will significantly underestimate deposition from spray drift".).

[387] *Ibid.*

[388] *See, e.g.*, A. J. Hewitt et al., "Development of the Spray Drift Task Force Database for Aerial Applications", *Environmental Toxicology and Chemistry*, Vol. 21, No. 3, pp. 648-658 (2002) ("four parallel spray swaths (flight line passes) . . . were used in the aerial studies"). ER, Vol. III, Annex 12.

lethality[389]. As detailed in paragraph 5.21 of the *Memorial*, the manufacturer of Cosmo-Flux reports that it increases the killing-power of the spray mixture by a *factor of four*[390]. This four-fold increase in efficacy has also been reported in the study commissioned by the U.S. government that led to Colombia's selection of Cosmo-Flux for inclusion in the spray mixture[391]. However, in assessing whether the amount of spray deposited downwind due to spray drift is sufficient to cause harm to plants, Colombia's modeling considers only the toxicity supplied by the glyphosate element of the spray mixture, and fails to take account of the vastly increased toxicity caused by the addition of Cosmo-Flux[392].

2.196 These are not the only flaws in Colombia's modeling. Dr. Hewitt concludes that the level of damage to plants becomes unacceptable when more than 43 g/ha of spray is deposited because, in his estimation, 5 percent of plant

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[389] *See supra* Chap. 2, paras. 2.55-2.56; Weller Report, *op. cit.*, p. 7-8, 15-16. ER, Vol. II, Annex 3.

[390] Cosmoagro, S.A., *Cosmo-Flux 411F.* EM, Vol. III, Annex 112.

[391] Ronald T. Collins & Charles S. Helling, *Surfactant-Enhanced Control of Two Erythroxylum Species by Glyphosate*, Weed Technology, Vol. 16, p. 851 (2002). EM, Vol. III, Annex 141 (reporting that two glyphosate-surfactant systems tested "increased glyphosate toxicity fourfold"); Chemicals Used, *op. cit.*, p. 2 (explaining that Cosmo-Flux was selected because it "most closely matched the most effective U.S. products" that had been tested by Collins & Helling). EM, Vol. III, Annex 144; CCM, Chap. 4, para. 4.53 (explaining the "Colombia chose the adjuvant Cosmoflux 411F" as a result of the Collins & Helling study). *See also* Dobson Report, *op. cit.*, p. 538. CCM, Vol. I, Appendix; Weller Report, *op. cit.*, p. 15-16. ER, Vol. II, Annex 3; Menzie & Booth Report, *op. cit.*, p. 24-25. ER, Vol. II, Annex 6.

[392] Hewitt et al., 2009, *op. cit.*, p. 923. CCM, Vol. III, Annex 131-B; Weller Report, *op. cit.*, pp. 15-16. ER, Vol. II, Annex 3.

species would be harmed[393]. But that 43 g/ha threshold is based on an artificial selection of plant species. Dr. Hewitt only considers dose-response values for a selection of hardy Northern Hemisphere crops, including turnips, radishes, beets and oats, the majority of which are not typically grown in tropical locations like the Ecuador-Colombia border region[394]. Indeed, he considers a very limited number plants that are representative of tropical agriculture, let alone of the endangered plant species endemic to the Ecuador-Colombia border region[395].

2.197 The extent to which Dr. Hewitt underestimates the risk of harm in the Ecuador-Colombia border region is made clear when his 43 g/ha value – the threshold at which he says harm to plants would become unacceptable – is compared with the conclusions of other published studies on plant injury caused by glyphosate. For example, a study sponsored by the Danish Environmental Protection Agency and Environment Canada by Boutin *et al.* derived a much lower value for protecting plant species[396]. Instead of 43 g/ha (the level arrived at

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[393] Hewitt et al., 2009, *op. cit.*, pp. 926-928, Table 3. CCM, Vol. III, Annex 131-B; *see also* Weller Report, *op. cit.*, pp. 13-14. ER, Vol. II, Annex 3.

[394] Hewitt et al., 2009, *op. cit.*, p. 927, Table 2. CCM, Vol. III, Annex 131-B; *see also* Weller Report, *op. cit.*, pp. 13-14. ER, Vol. II, Annex 3.

[395] Weller Report, *op. cit.*, pp. 13-14. ER, Vol. II, Annex 3; Balslev Report, *op. cit.*, pp. 5-24, 28. ER, Vol. II, Annex 4; Whitten et al. Report, *op. cit.*, pp. 10, 19-22, 28-31, 34-37, 40, 47-48, 50. ER, Vol. II, Annex 5. Leaving aside the methodological flaws highlighted above, the notion that a 5 percent plant injury level is acceptable is a normative judgment which Colombia is not entitled to make on behalf of Ecuador.

[396] Weller Report, *op. cit.*, p. 14. ER, Vol. II, Annex 3 (citing C. N. Boutin, C. Elmegaard and C. Kjaer, "Toxicity Testing of Fifteen Non-crop Plant Species with Six Herbicides in a Greenhouse Experiment: Implications for Risk Assessment", in *Ecotoxicology*. 13:349–369 (2004)). ER, Vol. III, Annex 13.

by Dr. Hewitt) the threshold calculated by the Boutin *et al.* study was *over 90 percent lower*: 4.1 g/ha. Moreover, the Boutin *et al.* study is consistent with other evaluations of plants injury caused by glyphosate-based products, which conclude that exposure to significantly less than 43 g/ha can harm plants[397]. For example, corn (maize), which is commonly grown in the Ecuador-Colombia border region[398], has been shown to be injured by glyphosate at doses as small as 26.25 g a.e./ha[399], which is *38 percent lower* than the threshold Hewitt *et al*. (2009) stated was sufficient to guard against harm to "sensitive" plant species[400]. Indeed, tomatoes that are exposed to a mere 3 g/ha of glyphosate exhibit a loss of flowers, which leads to loss of fruits[401]. The discrepancy between Colombia's view of an acceptable threshold and those calculated by others is all the more noteworthy since none of these other studies take into account the effect of Cosmo-Flux, which effectively reduces the threshold for plant injury by a factor of four[402].

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[397] Weller Report, *op. cit.*, p. 14. ER, Vol. II, Annex 3.

[398] Whitten et al. Report, *op. cit.*, pp. 3, 10, 21, 28, 31, 36-38, 40, 47, 50. ER, Vol. II, Annex 5

[399] Weller Report, *op. cit.*, p. 14. ER, Vol. II, Annex 3.

[400] Hewitt et al., 2009, *op. cit.*, pp. 926-928, Table 3. CCM, Vol. III, Annex 131-B; Weller Report, *op. cit.*, p. 14. ER, Vol. II, Annex 3.

[401] *Ibid.*

[402] *See supra* Chap. 2, para. 2.56; Weller Report, *op. cit.*, pp. 15-16. ER, Vol. II, Annex 3. Moreover, the studies did not take into account the risk to sensitive plant species *in Ecuador's border region*, which is home to thousands of plant species, many of them endemic to the region or threatened with extinction. Weller Report, *op. cit.*, p. 14. ER, Vol. II, Annex 3; Balslev Report, *op. cit.*, pp. 5-24. ER, Vol. II, Annex 4.

2. *Corrected Modeling*

2.198 As shown in the preceding paragraphs, the modeling done by Colombia is flawed by its reliance upon demonstrably false data. When the same AGDISP model used by Colombia is run using inputs that reflect the actual data, the results change dramatically and show that the spray mixture is deposited far into Ecuador – including at least 10 kilometres from the site of application – in amounts sufficient to cause harm[403]. As depicted in **Figures 2.13** and **2.14**, this encompasses all of the locations in the Ecuadorian Provinces of Sucumbíos and Esmeraldas that have been harmed[404].

2.199 For example, at just one kilometre from the site of application, running the model with median values from the flight path data obtained from the U.S. Department of State, *i.e.*, the 50th percentile value for flight speed (171.20 mph or 275.52 km/hr) and the 50th percentile value for altitude (40.61 metres) for the AT-802 aircraft (the spray plane that Colombia admits to using)[405], yields 4.91 g/ha of deposition[406]. That single line, by itself, deposits at that distance more herbicide than the Danish and Canadian study (Boutin *et al*. 2004) concluded can injure

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[403] *See infra* Chap. 2, paras. 2.198-2.201. The AGDISP drift modeling runs are presented in the Giles Report (ER, Vol. II, Annex 2); the inputs for each drift modeling run are provided on a data CD deposited with the Registry.

[404] *See infra* Chap. 3, Section I.

[405] Hansman & Mena Report, *op. cit.*, p. 25. ER, Vol. II, Annex 1.

[406] Giles Report, *op. cit.*, p. 13, Table 4. ER, Vol. II, Annex 2.

plants (4.1 g/ha)[407]. When the increased killing-power caused by Cosmo-Flux is taken into account, this deposition has the lethality equal to an effective dose of 19.64 g/ha[408]. Thus, a plane flying at the median speed and median height that sprays only one line of herbicide will cause to be deposited a kilometre away an amount of spray that is nearly *five times* the amount necessary to kill or injure plants[409].

2.200 But the situation is actually much worse, because the spray planes do *not* just release a single line of the spray mixture, as Colombia's drift modeling wrongly assumed[410]. Colombia's failure to account for multiple spray lines changes the results, significant as they already are, dramatically. For example, if there are 3 spray lines each at the 50th percentile for speed and the 50th percentile for height – an extremely conservative approach given the dozens of parallel lines that characterise Colombia's spraying practices – the effective deposition, taking into account the effect of Cosmo-Flux, at 1 kilometre is 57.08 g/ha[411]. That is roughly 25 percent more than the amount that even Colombia concedes causes an unacceptably high level of damage[412]. The effective deposition from 10 spray

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[407] Weller Report, *op. cit.*, p. 18. ER, Vol. II, Annex 3.

[408] *Ibid.*

[409] *Ibid.*

[410] Hansman & Mena Report, *op. cit.*, p. 29. ER, Vol. II, Annex 1; Giles Report, *op. cit.*, pp. 9, 34-40. ER, Vol. II, Annex 2.

[411] Weller Report, *op. cit.*, p. 18. ER, Vol. II, Annex 3.

[412] *Ibid.*

Distance From Spray Events Adjacent To Ecuador's Sucumbíos Province (2000 - 2008)

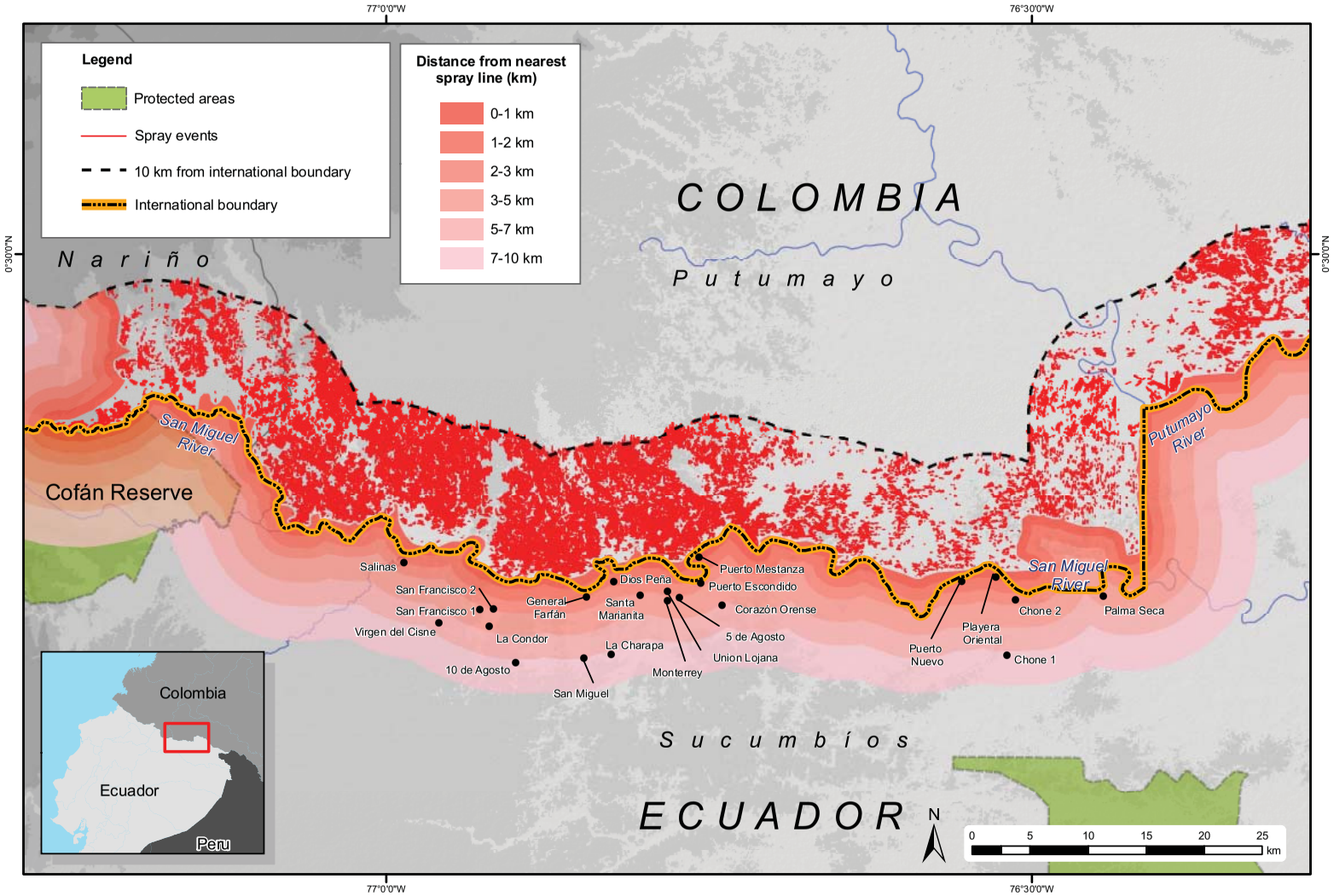

Figure 2.13

Distance From Spray Events Adjacent To Ecuador's Esmeraldas Province (2000 - 2008)

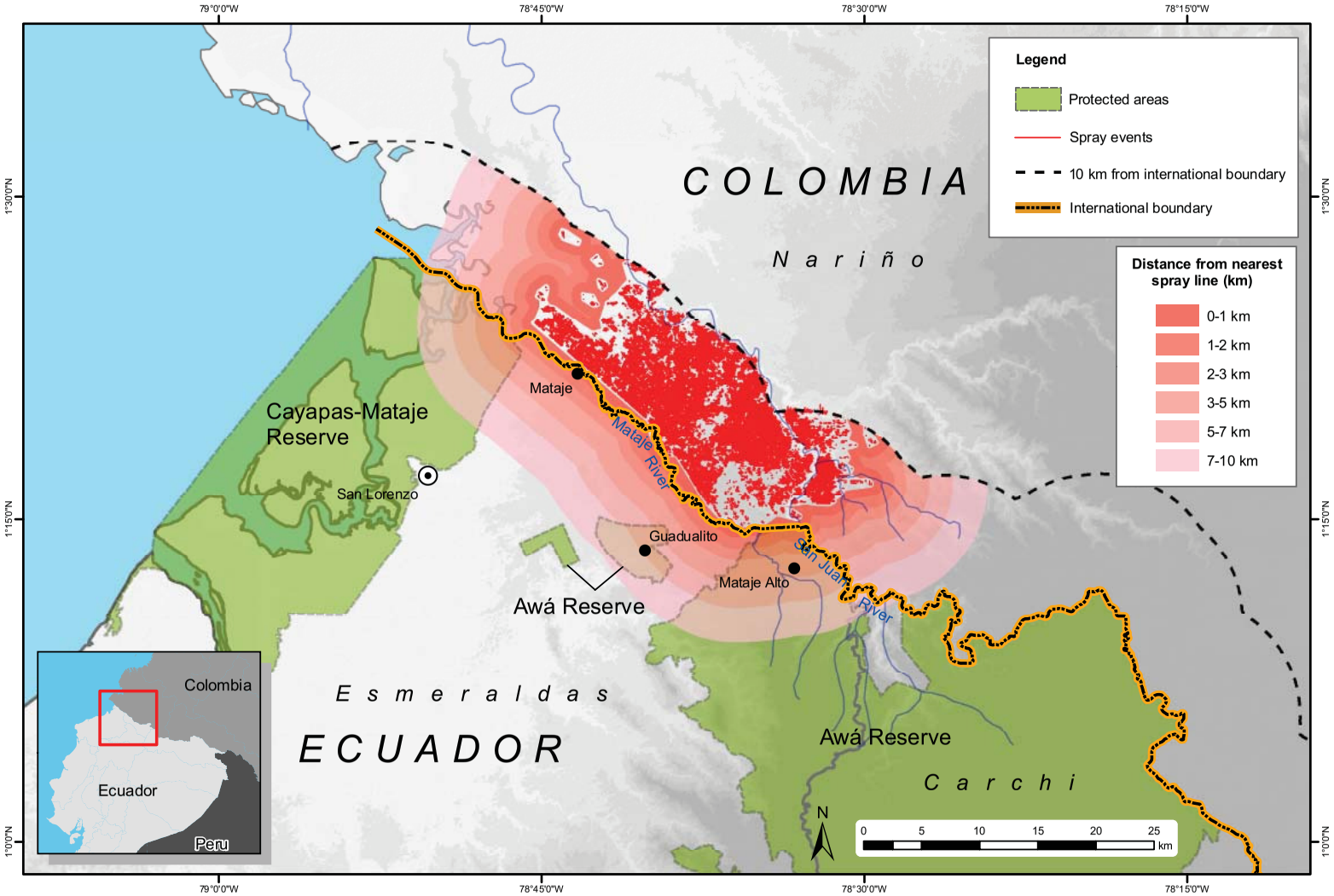

Figure 2.14

lines – a more accurate but still conservative assumption given how many parallel lines Colombia normally sprays – is 163.80 g/ha, *nearly four times* the amount that Colombia acknowledges is unacceptable[413]. It is also nearly 40 times the threshold calculated by Boutin *et al.*; 55 times the amount needed to damage tomato plants; and six times the amount sufficient to injure maize.

2.201 The flight data show that Colombia frequently sprays in a manner than is much worse than assumed in the preceding paragraphs, which presumed speed and height were at the median (50th percentile) of flights documented in the data. Consider what happens for a flight by an OV-10 aircraft (responsible for 20,251 spray events within 10 kilometres of Ecuador's border between 2000 and 2008[414]) operated at the 90th percentile of speed (207.50 mph or 333.94 km/hr) and 90th percentile for altitude (42.56 metres)[415]. A *single line* of spray results in an effective deposition of 54.24 g/ha at 1 kilometre from the application site[416]. This exceeds the amount that Colombia concedes would injure plants (43 g/ha) and is over 13 times more spray than the amount that Boutin *et al*. (2004) determined is enough to cause injury[417]. More concretely, it is twice the amount needed to

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[413] *Ibid.*

[414] Hansman & Mena Report, *op. cit.*, Appendix 3, p. 25. ER, Vol. II, Annex 1.

[415] *Ibid.*, p. 25.

[416] Weller Report, *op. cit.*, p. 20. ER, Vol. II, Annex 3.

[417] *Ibid.*, p. 18.

injure maize, and is over 18 times the amount of spray needed to injure tomato plants[418].

2.202 Thus, Colombia's spraying sends into Ecuador enough of the spray mixture to cause serious injury. To be sure, the amount of spray reaching deeper into Ecuador is less than the amount falling just inside it; but inserting the correct inputs into Colombia's model demonstrates that the levels of spray reaching points 10 kilometres from the application site is still sufficiently toxic to cause significant harm. For example, four spray lines from an AT-802 aircraft flown at the 50th percentile for height and 50th percentile for speed will result in an effective dose of 4.32 g/ha of spray 10 kilometres away, which exceeds the 4.1 g/ha threshold for harm derived by Boutin *et al*.[419]. It would take only two spray lines from an OV-10 aircraft operating at the 90th percentile for height and the 90th percentile for speed to deposit an effective dose at 10 kilometres that exceeds the same plant injury threshold[420]. These are conservative assumptions. Since dozens of spray lines were routinely documented, the amount of spray deposited 10 kilometres downwind into Ecuador, in actuality, is correspondingly more, and well exceeds the amount necessary to cause significant harm[421]. In that regard,

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[418] *Ibid.*, pp. 14, 20.

[419] *Ibid.*, pp. 18-19.

[420] *Ibid.*, pp. 19-20.

[421] Hansman & Mena Report, *op. cit.*, p. 29. ER, Vol. II, Annex 1; Giles Report, *op. cit.*, pp. 9, 34-40. ER, Vol. II, Annex 2; Weller Report, *op. cit.*, pp. 17-18. ER, Vol. II, Annex 3.

using the same example as above (an AT-802 aircraft flying at the 50th percentile for height and the 50th percentile for speed) but with 10 spray lines (a much more realistic scenario, according to the flight data or than as hypothesized above) the deposition of herbicide 10 kilometres from the site of the spraying would be more than two-and-a-half times the level necessary to harm plants[422].

2.203 As would be expected, the amount of herbicide that is deposited at distances between one and 10 kilometres is also sufficient to cause serious injury to plants, including food crops. For example, at 5 kilometres from the site of release, enough herbicide is deposited (an effective dose of 7.24 g/ha) from only two lines of spray from an AT-802 flying at the 50th percentile for speed and the 50th percentile for height, to exceed the threshold for unacceptable damage established by Boutin *et al*.[423]. Indeed, only a *single spray line* flown by an OV-10 at the 90th percentiles for speed and height deposits at 5 kilometres downwind an effective dose (5.92 g/ha) that exceeds the Boutin *et al*. threshold[424]. And it would take only 8 spray lines from an AT-802 flying at the 50th percentiles for speed and height – a conservative scenario given the much higher number of spray lines routinely flown by Colombia – to deposit an effective dose of 27.44

[422] Giles Report, p. 36, Table 20. ER, Vol. II, Annex 2. Weller Report, pp. 13-18. ER, Vol. II, Annex 3.

[423] Giles Report, p. 36, Table 20. ER, Vol. II, Annex 2; Weller Report, pp. 13-18. ER, Vol. II, Annex 3.

[424] Giles Report, p. 39, Table 24. ER, Vol. II, Annex 2; Weller Report, pp. 13-18. ER, Vol. II, Annex 3.

g/ha. That is more than the amount that injures maize and 9 times the level needed to harm tomato plants[425].

Conclusion

2.204 In sum, Colombia's use of highly toxic herbicides and other dangerous chemicals (the formulae for which it still keeps hidden), its pervasive violation of its own operational parameters necessary to control spray drift (on literally tens of thousands of occasions), and its spraying in close proximity to Ecuador, including immediately adjacent to human settlements and environmentally sensitive areas, have ensured that the spray drifts into, and causes damage to people, plants and

[425] Giles Report, p. 36, Table 20. ER, Vol. II, Annex 2. Weller Report, pp. 13-18. ER, Vol. II, Annex 3. Depending on other factors, the deposition could be even higher still. For example, the paragraphs above assume, as Hewitt *et al.* did, compliance with the EMP's wind speed requirement of 5 knots (2.57 m/s). Hewitt *et al*., 2009, *op. cit.*, pp. 923. CCM, Vol. III, Annex 131-B; Giles Report, *op. cit.*, pp. 28-29. ER, Vol. II, Annex 2. Stronger wind translates into greater drift. Giles Report, *op. cit.*, pp. 28-29. ER, Vol. II, Annex 2. Hewitt *et al*., also assume favourable atmospheric conditions and the absence of thermal inversions, both of which are not always the case, particularly since Colombia frequently sprays at night when unfavourable conditions, including thermal inversions, are common. Giles Report, *op. cit.*, pp. 27-28, 42-44. ER, Vol. II, Annex 2; Hansman & Mena Report, *op. cit.*, p. 23, n.9. Another important factor that influences spray drift is the canopy height of the vegetation below the spray planes, which can intercept spray droplets as they travel through the air. Giles Report, *op. cit.*, p. 23. ER, Vol. II, Annex 2. The preceding paragraphs assumed, in line with Hewitt *et al*., a canopy of 25.91 metres. Hewitt et al., 2009, *op. cit.*, p. 923. CCM, Vol. III, Annex 131-B; *see also* Giles Report, *op. cit.*, p. 23. ER, Vol. II, Annex 2. But large parts on the Colombian side of the border have been cleared. *See e.g.*, EM, Chaps. 5 and 6, paras. 5.93, 6.40; CCM, Chap. 1, para. 1.38; Solomon et al., 2005, *op. cit.*, p. 19, Figure 9. CCM, Vol. III, Annex 116. Consequently, there would be significantly more drift. Giles Report, *op. cit.*, p. 23. ER, Vol. II, Annex 2. Nor does the modeling described above account for the fact that by the time the droplets reach Ecuador they have an extremely high concentration of glyphosate and surfactant due to the evaporation of their water content. Since "[t]he concentration of the spray droplet is a driving force for absorption into the leaf", the "higher glyphosate concentration in the spray droplet increases plant susceptibility to injury". Weller Report, *op. cit.*, p. 22. ER, Vol. II, Annex 3. The likelihood of substantial injury is exacerbated even further due to the high humidity in the region, which makes it easier for the herbicide to penetrate plants. Weller Report, *op. cit.*, p. 21. ER, Vol. II, Annex 3.

livestock in, Ecuador. Colombia's own drift model, when the actual data generated by the spray planes is inputted, proves this conclusively. In the following Chapter, Ecuador describes the specific harms that have been caused by Colombia's aerial spraying operations along and near the border between the two States.

CHAPTER 3.

THE EVIDENCE OF HARM IN ECUADOR

3.1 In the previous Chapter, Ecuador showed that Colombia blatantly misrepresents: (i) the "harmlessness" of its aerial spray mixture (the full contents of which still remain undisclosed, but which is proven to harm human skin, eyes, and respiratory and digestive systems, and to kill all plants it comes in contact with); and (ii) its "strict compliance" with operational requirements that prevent spray drifting into Ecuador (but which Colombia violated tens of thousands of times in spray flights along and near enough to the border so that the spray was bound to reach Ecuador). The flight data automatically recorded by the spray planes, and furnished to the governments of Colombia and the United States, along with other official Colombian and U.S. Government reports, unmask Colombia's false presentations about the contents of the spray mixture and the execution of the spraying programme. The data show tens of thousands of spray flights in close proximity to Ecuador's border that violated all of Colombia's operational requirements for preventing spray drift, which made it inevitable that the spray would drift into Ecuador in sufficient quantities to harm people and livestock, kill crops and other lawful plants, and damage the pristine forests, fields, rivers and streams that make up Ecuador's unique and diverse natural environment.

3.2 In its *Memorial*, Ecuador showed in Chapter 5 the actual harms caused by spray drift from Colombia's nearby aerial spraying operations to people, animals, crops and the environment in Sucumbíos and Esmeraldas Provinces, within 10

kilometres of the border with Colombia. The evidence is extensive, and comes from many different sources, all of which corroborate one another. The flight data that Ecuador subsequently obtained from the U.S. Department of State provides more corroboration of the harms caused by Colombia's aerial spraying programme, because it establishes not only the likelihood but the inevitability of harm in Ecuador by the reckless and irresponsible manner in which the spray programme was carried out, which guaranteed that substantial quantities of toxic spray – sufficient to kill plants deep inside Ecuador – would drift across the border.

3.3 In this Chapter of the *Reply*, Ecuador responds to the *Counter-Memorial*'s critique of the evidence of harm the sprayings have caused in Ecuador, presented in the *Memorial*. As Ecuador will demonstrate, the rebuttal Colombia makes does nothing to undermine the proof presented in the *Memorial*. Given the carelessness with which the sprayings are conducted, spray drift across the border and resulting harm to people, animals and plants in the border regions abutting Colombia's Nariño and Putumayo Provinces is inevitable.

3.4 As shown within, much of Colombia's effort to refute Ecuador's showing of harm is circular. Throughout its analysis of Ecuador's evidence, Colombia contends that the sprayings could not have caused the damage Ecuador claims

because the spray is incapable of causing that damage[426]. This argument, of course, neatly assumes its own conclusion. In truth, as set forth more fully in Chapter 2, most, if not all, of the harms identified by Ecuador are fully consistent with the known effects of the admitted components of the spray mixture, and predictable based on the amount of spray that is deposited in Ecuador, even without allowing for the toxic effects of the unknown ingredients.

3.5 To the extent the *Counter-Memorial* does more than assume what it purports to be showing, Colombia's main line of attack is to question the credibility of the eyewitness statements Ecuador presented as one element of its proof to substantiate the harms caused. According to Colombia, these 38 different witness testimonies (plus nine more from Colombian witnesses) are entitled to "no weight" because they are allegedly uncorroborated by other sources of evidence[427]. Beyond misunderstanding the Court's jurisprudence on the subject of witness statements (as discussed in Section II below), Colombia's argument is factually incorrect. In the pages to follow, Ecuador will show that the credibility and reliability of its witness statements are verified by multiple additional sources of evidence, much of it contemporaneous to the events in question, and some of it emanating from organs of the Colombian government

[426] *See, e.g.*, Counter-Memorial of Colombia, Vol. I, Chap. 7, paras. 7.5, 7.137 (29 Mar. 2010) (hereinafter "CCM") ("… taking into account the scientific evidence on the limited effect of drift and the strict technical parameters under which the spraying operations are carried out in Colombia … no damage could have occurred in Ecuadorian territory".).

[427] CCM, Chap. 7, para. 7.127.

itself. What emerges is a consistent and coherent pattern of harm that is consistent in all material respects from year to year and place to place. It is precisely this coherence and consistency that, in Ecuador's view, constitutes the most compelling evidence of the harms Colombia's sprayings have inflicted on Ecuador.

3.6 The flight data Ecuador has obtained from the U.S. Government constitute a key new element in this already sizable bundle of mutually reinforcing and corroborative evidence. The data provide compelling proof of what Ecuador has long contended: Colombia has conducted tens of thousands of spray operations along the border with Ecuador since 2000 without regard for the operational requirements necessary to prevent spray drift into Ecuador; indeed, in most of these cases, the safety limits were exceeded by extremely large margins. As will be discussed and demonstrated graphically in the sections to follow, the flight data obtained from the U.S. Department of State underscore the connection between the aerial sprayings and the harms demonstrated in Ecuador's *Memorial*.

3.7 In short, when there were sprayings near the border, there was harm. The consistency between the flight data and Ecuador's evidence of harm strongly underscores the reliability of Ecuador's evidence, precisely because the information contained in those data is entirely new to Ecuador. Never before had Ecuador had such detailed information about the dates and locations of spray

events. As detailed in the *Memorial*, Colombia never gave Ecuador advance notice of the dates and locations of spray events[428], and the indigenous people and *campesinos* who provided witness statements certainly were not given notice by Colombia. Even so, the facts show tight congruity between the flight data and Ecuador's other evidence. As discussed in the paragraphs to follow, the data Ecuador received from the United States substantially coincide in temporal and geographic terms with the evidence of harm presented in the *Memorial*. In other words, thanks to this reliable new evidence from a third State, there is now definitive proof that the harms in Ecuador described in the *Memorial* occurred in the wake of nearby aerial sprayings by Colombia. This is compelling new corroboration of the eyewitness accounts Ecuador has provided.

3.8 This Chapter is presented in the following manner: **Section I** examines the mutually corroborating evidence of harm in Ecuador, focusing on the correspondence between the information the flight data reveal about the dates and locations of sprayings and the evidence Ecuador has previously introduced – in the form of witness statements, contemporaneous observation mission reports, newspaper articles, scientific studies of the chemicals used and their labels, as well as Colombia's own reports and flight path data. Where pertinent, Ecuador supplements the evidentiary record with still other information demonstrating the

[428] *See* Memorial of Ecuador, Vol. I, Chap. 3, paras. 3.2-3.3, 3.17, 3.21, 3.25, 3.46 (28 Apr. 2009) (hereinafter "EM").

existence of the harms alleged at the times and places spraying occurred. **Section II** reviews the evidentiary standards concerning witness statements, demonstrating Colombia's misunderstanding of the evidentiary value accorded to these testimonies. **Section III** further corroborates the evidence of harm in Ecuador by looking at the evidence of the same harms found in Colombia. Notably, much of this evidence comes from the Colombian government itself. As shown, the same types of harms in Ecuador that Colombia tries so assiduously to separate from the border sprayings have also systematically been inflicted on the Colombian areas sprayed by the same planes with the same chemical cocktail. Put simply, the same causes produce the same effects, in both countries.

Section I. The Mutually Corroborating Evidence of Harm in Ecuador

A. SUCUMBÍOS 2001

3.9 The Court will recall that reports of harm first emanated from Ecuador's remote border regions of Sucumbíos Province at the very end of 2000 and early 2001[429]. The flight path data confirm this aspect of the timeline. **Figure 3.1** depicts the location of spray flights within 10 kilometres of the Ecuador-Colombia border, along Sucumbíos Province, during December 2000 and February 2001. Flights in December 2000 are indicated in brown; flights in January 2001 are indicated in purple; flights in February 2001 are indicated in

[429] *See* EM, Chap. 6, paras. 6.4 *et seq.*

orange. According to these data, Colombia conducted at least 3,276 spray flights within 10 kilometres of Ecuador in December 2000 and 8,228 more in January 2001[430].

3.10 The proximity of the sprayings to the Sucumbíos communities discussed in Ecuador's *Memorial*, including Salinas, Puerto Escondido, Puerto Mestanza, Corazón Orense and San Francisco 1 and 2 (the locations of which are indicated on the map) is evident, and needs no further comment here. Given (a) this proximity, and (b) the substantial drift predicted by Colombia's own drift model (corrected only for the true flight parameters, as discussed in the previous Chapter[431]), it is not surprising that many Ecuadorian residents of the border region report seeing Colombian aircraft conducting spray operations at this time, followed in their wakes by the deposit of what witness after witness described as a white, foul-smelling mist falling on Ecuadorian territory.

3.11 Witness 5, a resident of Salinas, a community less than 1 kilometre from the spraying, offers a typical description. He states:

> "I remember that in 2001 I was working on my farm, which is located near the San Miguel River, and I saw three white planes protected by helicopters flying over Salinas. The planes left behind a white cloud of smoke that had a sour chemical-like odor.

[430] See R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008* (Jan. 2011), Appendix 3: Statistics, p. 28. ER, Vol. II, Annex 1.

[431] *See supra* Chap. 2, paras. 2.189-2.203.

Spray Events Within 10 Kilometres of Ecuador's Sucumbíos Province (December 2000 - February 2001)

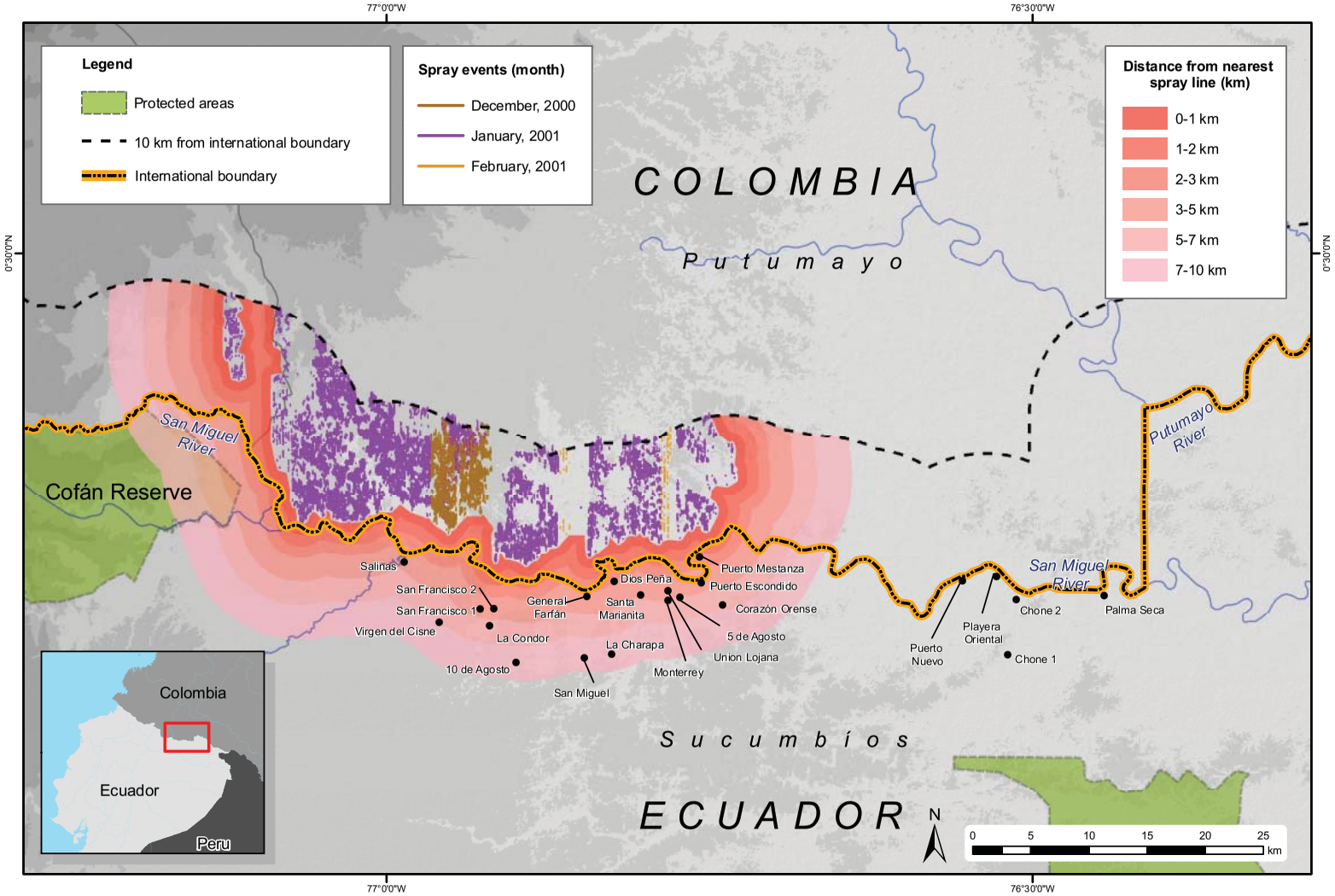

Figure 3.1

> This odor could be felt in both the air and in the water we consumed"[432].

He then recounts what happened afterwards:

> "About four days after the fumigations, my body ached all over and my skin itched. I had bumps on my skin that lasted for about a month and a half . . . . A week after, the coffee began to lose its flowers, the leaves started to turn yellow and then they turned black, drying up completely. The cacao also turned yellow and, when it was cut, one could see inside that the cacao seeds had rotted. The grass turned a yellowish color that began at the top and moved down to the roots"[433].

3.12 Similar testimony comes from Witness 4, also a long-time resident of Salinas, who states that:

> "In the year two thousand and one, I remember having seen two planes followed by helicopters which passed by slowly, several times a day, above our community dropping something like a mist. I was working on the farm and I could see them crossing the San Miguel River and going from one side of the border to the other. Since I did not know what this was all about and I thought the mist was not bad, I continued working on the farm while the planes sprayed over me and my children who were playing outside"[434].

Like Witness 5, she testifies:

> "A few days after the spraying, the plants started to turn yellow and then they turned black and died. I had never experienced anything like that. I tried to save the crop with fertilizers but it did not work and we lost everything. Two weeks after the first spraying, my family and I got bumps all over the body, we had an

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[432] Declaration of Witness 5, 16 Jan. 2009 (hereinafter "Witness 5 Declaration"). EM, Vol. IV, Annex 193.

[433] Witness 5 Declaration, *op. cit*. EM, Vol. IV, Annex 193.

[434] Declaration of Witness 4, 22 Dec. 2008 (hereinafter "Witness 4 Declaration"). EM, Vol. IV, Annex 192.

> itch that was unbearable. I made home remedies for the children, like I have done so many times before when they were bitten by insects, but this time the medicine I had prepared did not cure them"[435].

3.13 Spurred by the complaints of area residents, in March 2001, several local non-governmental organizations ("NGOs") visited the border regions to investigate and record their observations. The first of the numerous reports issued by organizations from across civil society on the subject of the aerial sprayings was issued in June 2001[436]. Echoing the statements of Witnesses 4 and 5 just cited, the report found significant impacts on the health of the local populations, their crops and their animals. Health symptoms recorded included eye problems, respiratory distress, dermatological conditions and gastrointestinal difficulties[437].

3.14 With respect to the damage to crops, the 2001 report stated: "The *campesinos* from this entire zone reported significant damages to the crops, to the extent as to believe they will starve soon. During our trip, we were able to appreciate all the effects mentioned [by them]"[438]. Paralleling Witness 5's description of what happened to his coffee and cacao plants, the report observes:

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[435] Witness 4 Declaration, *op. cit*. EM, Vol. IV, Annex 192.

[436] Accion Ecologica, *Report on the Investigation of the Fumigations' Impacts on the Ecuadorian Border* (June 2001). EM, Vol. IV, Annex 161.

[437] *Ibid.*, pp. 5-6.

[438] *Ibid.*, p. 10.

> "All the *campesinos* said the coffee has been affected. The plants turn yellow, dry up and no longer produce seeds. The bean is empty. The harvest for the year has been lost. We were able to confirm that the leaves were as if they had been burned and the fruit is empty.
>
> . . . As with the coffee, the leaves of the cocoa plant were yellow to the point of drying up and the fruits on the plants appeared dry."

3.15 The report's conclusions include the following:

> "There is a direct temporal relation between the fumigations and the appearance of the sicknesses.
>
> There is an inverse proportional relationship between the distance from the site that was sprayed and the symptomatology. As the distance from the sprayed site increases, the symptomatology in the population decreases.
>
> . . .
>
> The population that has suffered the impacts of the spraying is experiencing feelings of anxiety. They have no financial support, no compensation or appropriate care for their health, which has been undermined by a spraying program that renders them invisible.
>
> The negative impacts on the population's health and its nutritional state may increase if no adequate measures are taken to offset the failure of their crops and the death of their livestock and animals"[439].

3.16 This initial report was followed just a month later, in July 2001, by another study issued by a delegation composed of representatives from several NGOs, including the Confederation of Indigenous Nationalities of Ecuador

[439] *Ibid.*, p. 11.

("CONAIE")[440]. As part of the delegation's mission, it met with affected persons and conducted site-visits to investigate the allegations of harm first-hand. Notably, the report contains a section summarizing the testimonies of the local populations that in all material respects parallels the witness statements Ecuador submitted with the *Memorial*. Rather than recapitulate those contemporaneous testimonies here, Ecuador respectfully refers the Court to the relevant sections of the report, located in Annex 162 of the *Memorial*[441].

3.17 The NGO delegation conducted its own investigation of the situation on the border and, with respect to the health situation, stated:

> "Analyzing the reports of the ten leading causes of illness in the General Farfán Health Subcentre, whose jurisdiction includes San Francisco 2, it was discovered that the three leading causes of illnesses in the population continued to be respiratory infections, which increased by 42% (from 206 to 293 cases) from January to June 2001, in comparison to the same period of the previous year; skin infections, which increased by 48% compared to 2000 (from 147 to 218), and malaria, which increased by 33% (from 111 to 148).
>
> The doctor at the Subcentre indicated that the impact of the fumigations was significantly more noticeable in January, when, suddenly, people began inhaling the chemical. There were

[440] Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia* (19-22 July 2001). EM, Vol. IV, Annex 162.

[441] *Ibid.*, pp. 10-13. *See e.g.*, *ibid.*, p. 10 ("There are numerous affected Kichwa people along the San Miguel River and the crops are affected by the sprayings. The planes crossed the border and we have respiratory, eye and skin problems . . . "); *ibid.*, p. 11 ("School children, in the communities close to the border, are having problems. Before they used to play and now they have headaches and diarrhea".). EM, Vol. IV, Annex 162.

numerous cases of rhinitis and eye irritation, which were not recorded"[442].

3.18 The July 2001 report also noted the psychological trauma caused by the aerial sprayings and their aftermath. The report notes: "The sprayings are causing situations of insecurity and fear in border populations"[443]. As explained by Salinas resident Witness 5, in addition to the physical symptoms "the sprayings have also caused psychological problems in our village. It has caused fear, concern, uncertainty and a lot of anxiety"[444]. She, like others, was particularly concerned about the impact on her young child who, years later, "is still scared that the planes might come back"[445]. This anxiety has had unfortunate consequences. Many residents fearing for their health and survival have fled away from the border. As described by Witness 18, eight of her children have left and "do not want to return because they are afraid; they hear an airplane and they think that they are going to spray again"[446]. Many of those who remain live with this fear. As echoed by another Salinas resident, "[m]y community lives in

[442] *Ibid.*, p. 14.

[443] *Ibid.*, p. 22.

[444] Witness 5 Declaration, *op. cit.* EM, Vol. IV, Annex 193.

[445] *Ibid.*

[446] Declaration of Witness 18, 15 Jan. 2009 (hereinafter "Witness 18 Declaration"). EM, Vol. IV, Annex 204.

constant anguish. We do not know when this nightmare will end. We are afraid that they will spray again and we will not be able to feed our children"[447].

3.19 Concerning the effects of the spraying on crops, the NGO report states:

> "COFFEE: the crops exhibit an alteration of the green color of their leaves, with a yellowing of the central vein; followed by total chlorosis (yellowing) and the presence of brown spots both at the tip of the leaves and their edge; and the withering of the entire plant. . . .
>
> YUCCA: yellowing was observed in the leaves and in the root or edible part. When cut cross-sectionally, one can see a dark brownish-grey halo near the bark, which appears to be healthy. . . .
>
> PLANTAIN: withering was observed in the bottom leaves of the mother plant and in the stems of the shoots. The campesinos said that the growth of the plant has ceased. When cut cross-sectionally, necrosis was observed in the xylem or conducting tissue, which prevents the transport of sap. . . .
>
> RICE: there is a yellowing that has markedly reduced the harvest. A three month-old plot was inspected. At the mere sight of it, one could detect a discoloration of the entire plant and the onset of diseases. . . .
>
> PASTURE GRASS: it was observed that there is discoloration or yellowing that starts at the tips and edges of the leaves, and subsequently the entire plant dries and dies"[448].

3.20 It is notable, particularly in light of Colombia's criticisms discussed below, that both of these reports were prepared contemporaneous to the events in

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[447] Declaration of Witness 3, 17 Jan. 2009 (hereinafter "Witness 3 Declaration"). EM, Vol. IV, Annex 191.

[448] Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 16 (19-22 July 2001). EM, Vol. IV, Annex 162.

question by organizations that have no other motive than to draw attention to the problem they found. It is equally telling that both reported on phenomena that are entirely consistent not only with each other but with the witness statements as well.

3.21 The findings of these two NGO missions were echoed in contemporaneous media accounts. In July 2001, for example, a major national daily, *El Universo*, published an article detailing the effects of the aerial sprayings earlier in the year. With respect to the sprayings in northern Sucumbíos, the newspaper recounted the spray's impacts on the border community of La Charapa[449]. The President of the Association of Afro-Ecuadorians in Sucumbíos, a local farmer, is quoted describing how, four or five months earlier, "a strange rain was swept onto his crops by the wind, and an unbearable smell hung in the air"[450]. The article recounts how the residents lived in fear after seeing the spray's effects[451]. Only 20 of the 130 chickens in María Reyna's farm survived, the pigs slowly died, the various crops withered and stopped producing[452]. In the neighbouring town of 10 de Agosto, the reporter found the scars left behind on the residents' skin from the skin rashes that had followed the border spraying, in

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[449] "The Drama of Fumigations", EL UNIVERSO (Guayaquil, 10 July 2001). ER, Vol. IV, Annex 61.

[450] *Ibid.*

[451] *Ibid.*

[452] *Ibid.*

addition to the stomach aches, respiratory problems, dizziness and headaches that came with it[453].

3.22 In the face of this evidence, Colombia takes the position that none of it is credible[454]. Perhaps to distract the Court from the other sources of evidence, the *Counter-Memorial* focuses special attention on the eyewitness statements presented in the *Memorial* and attacks them on several fronts. Indeed, it is no exaggeration to state that the primary thrust of Colombia's effort to rebut Ecuador's showing of harm is to argue that the witness testimonies do not withstand scrutiny. Yet, as Ecuador will show in the pages to follow, Colombia is wrong. Taken collectively and together with the other elements of proof – now supplemented by the spray flight data obtained from the United States – there is every reason to credit these sworn, eyewitness statements from local residents who personally observed and experienced the aerial sprayings and the effects on themselves and their communities.

3.23 The essence of Colombia's attack on Ecuador's witness statements is encapsulated in a single line from the *Counter-Memorial*: "The allegations of the *campesinos* remain wholly unsubstantiated"[455]. In Ecuador's view, this argument

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[453] *Ibid.*

[454] *See, e.g.*, CCM, Chap. 7, para. 7.6.

[455] CCM, Chap. 7, para. 7.151.

is both factually wrong and disturbingly condescending. Surely, the first-hand accounts of Ecuadorian *campesinos* are entitled to the same weight as those of other human beings. The mere fact that they are impoverished citizens of the developing world does not render them any less able than anyone else to testify about facts within their personal experience. Indeed, the opposite may be true in this case. As subsistence farmers, their very survival depends both on their own health and on the health of their crops. They are thus particularly attuned to nature's rhythms, agricultural cycles and even slight disturbances to the delicate balances of their lives[456].

3.24 Equally, and as a matter of fact, Colombia is wrong that Ecuador's case rests exclusively on these eyewitness statements. Ecuador has already cited to NGO and press reports contemporaneous to the earliest aerial sprayings that confirm the existence of the harms alleged. In addition, Ecuador relies on multiple other sources to support its claims, including: (a) the reports of several UN Special Rapporteurs; (b) additional NGO field assessments conducted in later years; (c) other media accounts; (d) contemporaneous medical inquests; (e) Colombian eyewitnesses and, not least; (f) reports from organs of the Colombian

[456] *See* Norman E. Whitten, Jr., Ph.D., Dr. William T. Vickers, Ph.D. & Michael Cepek, Ph.D., *Tropical Forest Cultural Ecology and Social Adaptation in the Ecuadorian Border Region with Colombia*, pp. 3, 13, 31 (Jan. 2011) (hereinafter, "Whitten et al. Report") (describing how "the people of the border region are inextricably linked to their natural environment and are thus extremely vulnerable to environmental perturbations that upset this balance"). ER, Vol. II, Annex 5.

government itself. Each of these independent sources of evidence is discussed further in this Chapter. For the moment, the essential point is that Colombia misrepresents the truth when it suggests that the witness statements stand alone. In reality, they are just one part of a consistent and mutually reinforcing whole that together forms a body of consistent and coherent evidence all demonstrating harm in Ecuador. The spray flight data is only the latest addition to this body of evidence, although it is a very important one.

3.25 In addition, as was detailed in Ecuador's *Memorial* and as is further explained in Chapter 2 of this *Reply*, the descriptions of harm that are provided in the witness testimonies and elsewhere are consistent with the properties of the known chemicals in the spray mixture. The reports of skin and eye irritation are not surprising given the fact that surfactants included in glyphosate-based products, including POEA, are known to cause such effects. In fact, the label of Roundup SL – a product Colombia admits to using – warns users to "[a]void contact with eyes and skin" because the product causes irritation[457]. As discussed in Chapter 2, another product Colombia has used, Roundup Export, is capable of causing "irreversible eye damage"[458], and in fact its use was discontinued for

[457] *Colombia Roundup SL Label*, p. 1. EM, Vol. III, Annex 115. *See also* EM, Chap. 5, paras. 5.44–5.45.

[458] United States Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, *Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia, Response from EPA Assistant Administrator Johnson to Secretary of State*, p. 8 (19 Aug. 2002) (hereinafter "*EPA 2002 Analysis*"). EM, Vol. III, Annex 143; *see supra* Chap. 2, paras. 2.19-2.23.

precisely that reason. The health symptoms reported – not just in Ecuador's witness statements, but by the UN Special Rapporteurs, NGOs, contemporaneous medical inquests, the media, and other observers – are also consistent with the findings of Colombia's own studies. For example, Colombia's own assessment acknowledges that ingestion of glyphosate can cause "erosion of the digestive tract, which manifests as difficulty in swallowing, sore throat, and gastrointestinal hemorrhaging"[459]. In attacking Ecuador's witness statements, the *Counter-Memorial* ignores the remarkable consistency of those statements with its own conclusions about the risks posed by the spray mixture.

3.26 The harm to plants, animals and the environment is also in line with the scientific evidence. As explained in the Report of Dr. Stephen C. Weller, the hallmarks of glyphosate exposure in plants are stunted growth and a yellowing or blackening of the plant tissue, all symptoms that the affiants describe with great specificity[460]. Those very symptoms were universally described in the witness statements, contemporaneous field reports and press accounts. The product label for Roundup Export warns "DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT

[459] Republic of Colombia, *Environmental Risk of the Herbicide Glyphosate*, Sec. 1.7.1 (date unknown). EM, Vol. II, Annex 101.

[460] *See* Stephen C. Weller, Ph.D., *Glyphosate-Based Herbicides and Potential for Damage to Non-Target Plants Under Conditions of Application in Colombia*, pp. 1, 5-6, 22-23 (Jan. 2011) (hereinafter "Weller Report"). ER, Vol. II, Annex 3.

INTENDED"[461]. Thus, the extensive destruction of food crops and other plants in Ecuador as a result of their exposure to Colombia's spray mixture is entirely predictable. Moreover, the witness statements and other accounts invariably mention similar damage to multiple plant species; the fact that the dead and dying plants were not specific to a particular species or crop, as would be expected with a disease or insect infestation, is further evidence that the damage was caused by an indiscriminate herbicide[462].

3.27 Tellingly, the *Counter-Memorial* says next to nothing about the early NGO reports cited above at paragraphs 3.13 to 3.19, which were described in the *Memorial*[463]. Perhaps Colombia knows they negate its assertion that Ecuador's witness statements are uncorroborated by contemporaneous evidence. Perhaps Colombia has nothing to say consistent with its premise that the witness statements are latter-day inventions of a few dozen untrustworthy *campesinos*. Whatever the reason, rather than respond to these reports or any of the others like them, Colombia chooses a different tactic. The *Counter-Memorial* suggests that in December 2004, Ecuador itself acknowledged that no harm of any kind had been caused anywhere in the country at any time up to that date and, as a result,

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[461] *United States Roundup Export Label,* United States Pesticide Product Label System, Registration No. 524-308 (9 July 1997). EM, Vol. II, Annex 125.

[462] *See* Weller Report, *op. cit.*, p. 3. ER, Vol. II, Annex 3.

[463] *See, e.g.*, EM, Chap. 6, paras. 6.12-6.13, 6.38, 6.43, 6.50, 6.57, 6.83-6.86.

all of its evidence from before that date can be summarily discarded[464]. And, what is the basis for this remarkable claim? Statements issued by the Ecuadorian Foreign Ministry in 2004 to the effect that it had conducted site visits to the border area and found no traces of glyphosate residue in any of the water or soil samples taken[465].

3.28 Colombia has gorged itself on Ecuador's statements that glyphosate was not detected in these samples. The *Counter-Memorial* speaks of this for no fewer than 18 pages. But Colombia's gluttonous reliance on these statements is both misplaced and disingenuous.

3.29 It should come as no surprise to Colombia that glyphosate was not detected in the river waters or the soil that were sampled. Colombia's *Counter-Memorial* and experts recognize that glyphosate "is rapidly removed from water by absorption to sediments and suspended particulate matter"[466]. Moreover, in addition to the chemical's dissipation in the water, the river's currents will quickly carry any materials away from the spray site. Colombia is well aware this happens. The government agency in Colombia's Nariño Department (which abuts Ecuador) that is responsible for environment and natural resources,

[464] *See, e.g.*, CCM, Chap. 7, paras. 7.2, 7.112, 7.113.

[465] *Ibid.*

[466] K.R. Solomon et al. "Environmental and Human Health Assessment of the Aerial Spray Program for Coca and Poppy Control in Colombia", OAS, Washington, D.C., 31 March 2005, p. 20 (hereinafter "Solomon, 2005"). CCM, Vol. III, Annex 116.

informed the Colombian Ministry of Environment that testing for glyphosate in a local river would be fruitless: "Given the strong current of the Chaguí River and the fact that many months have transpired since the fumigations began, it is not possible to take samples of water to determine the degree of affectation of the river"[467]. Glyphosate also disappears quickly from the soil[468]. After that, it is undetectable. That glyphosate was not found in the running river waters or soil samples weeks or months after the aerial sprayings gets Colombia nowhere: it does *not* prove glyphosate was not deposited there several weeks earlier by the spray planes.

3.30 In fact, Ecuador's searches for glyphosate residues were hopeless exercises: they were conducted at the wrong times and places. **Figure 3.2**, shows why they were in vain. As the Court can see, during the two-month period from November to December 2004, Colombia conducted only very limited aerial spraying operations within 10 kilometres of Ecuador; the contrast with other two-month periods, such as the August to September 2002 period depicted in **Figure 3.2**, could not be more stark. Thus, to say that testing in December 2004 found

[467] Letter from Francisco Santander Delgado, Director General, Corponariño, Republic of Colombia, to Maria Cecilia Rodriguez, Minister of the Environment, Republic of Colombia (26 Sept. 2002). ER, Vol. V, Annex 144.

[468] *See* Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador, p. 3 (14 July 2001). EM, Vol. II, Annex 43. Weller Report, p. 3. ER, Vol. II, Annex 3; Charles A. Menzie, Ph.D. & Pieter N. Booth, M.S., *Response to: "Critique of Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador," As Presented in: Counter-Memorial of the Republic of Colombia, Appendix*, pp. 25-26 (Jan. 2011) (hereinafter "Menzie & Booth Report"). ER, Vol. II, Annex 6.

no glyphosate residue says nothing. If any glyphosate had been present in the area after the sprayings, it would have been gone, or at least undetectable, by the time the tests for it were conducted.

3.31 The same applies to Ecuador's efforts to test for glyphosate earlier in 2004. We know from the flight data that the spraying often occurred more than a month earlier and more than 10 kilometres away. In the July 2004 testing, for example, the samples were taken by Ecuador, in Esmeraldas, more than two months after the most recent sprayings within 10 kilometres, which had been completed by April 2004[469]. There was no spraying along the border in July 2004[470]. Similarly, the closest spray lines to the Sucumbíos sites tested in May 2004 are all more than 10 kilometres away[471].

3.32 Thus, the only result that these 2004 tests and statements reach is that, at that place and time, Colombia's prior sprayings were sufficiently far removed geographically and temporally to have left any discernable traces in the local

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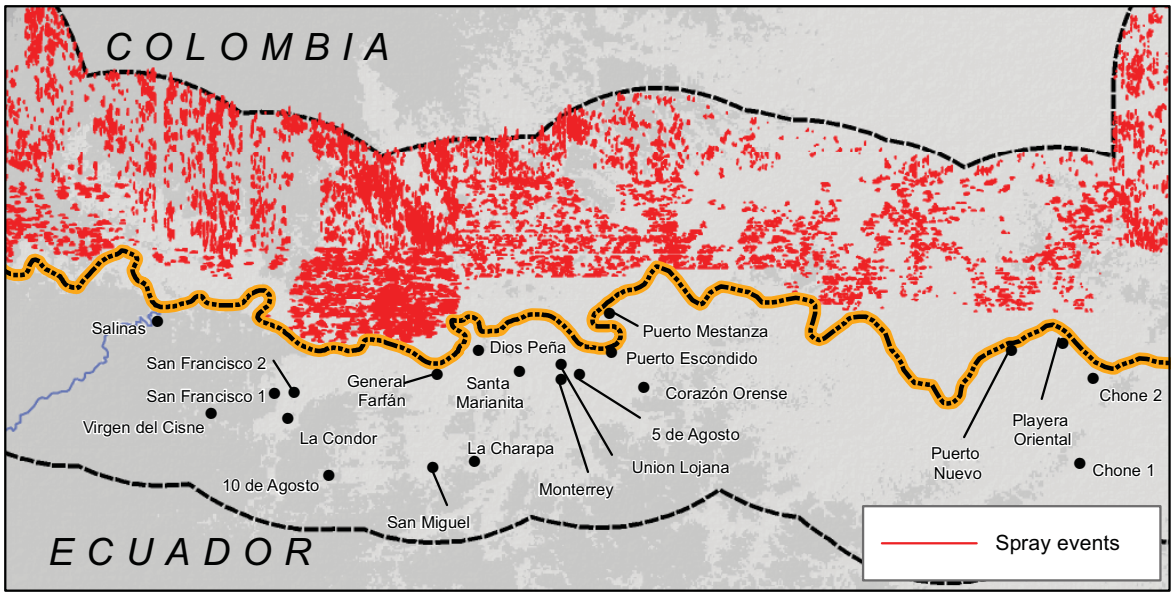
[469] *See infra* Figure 3.6. *See also* Press Bulletin No. 480 of the Ecuadorian Foreign Ministry, "No glyphosate residues were found in Esmeraldas, border with Colombia" (26 Aug. 2004). CCM, Vol. II, Annex 81.

[470] *See infra* Figure 3.6.

[471] *See Flight Path Data Received From the U.S. Department of State and Other Technical Information*. *See also* Press Bulletin No. 388 of the Ecuadorian Foreign Ministry, "No glyphosate residues exist in the waters of the rivers of the Sucumbíos Province" (25 June 2004). CCM, Vol. II, Annex 80. Even if the sampling at the San Miguel River was at the closest point to the spray lines, which could make it less than 10 km away, as discussed above, testing in a large, running river will not detect glyphosate residue several days, weeks, or even months after the most recent spraying.

Spray Events Within 10 Kilometres of Ecuador's Sucumbíos Province (August - September 2002)



Spray Events Within 10 Kilometres of Ecuador's Sucumbíos Province (November - December 2004)

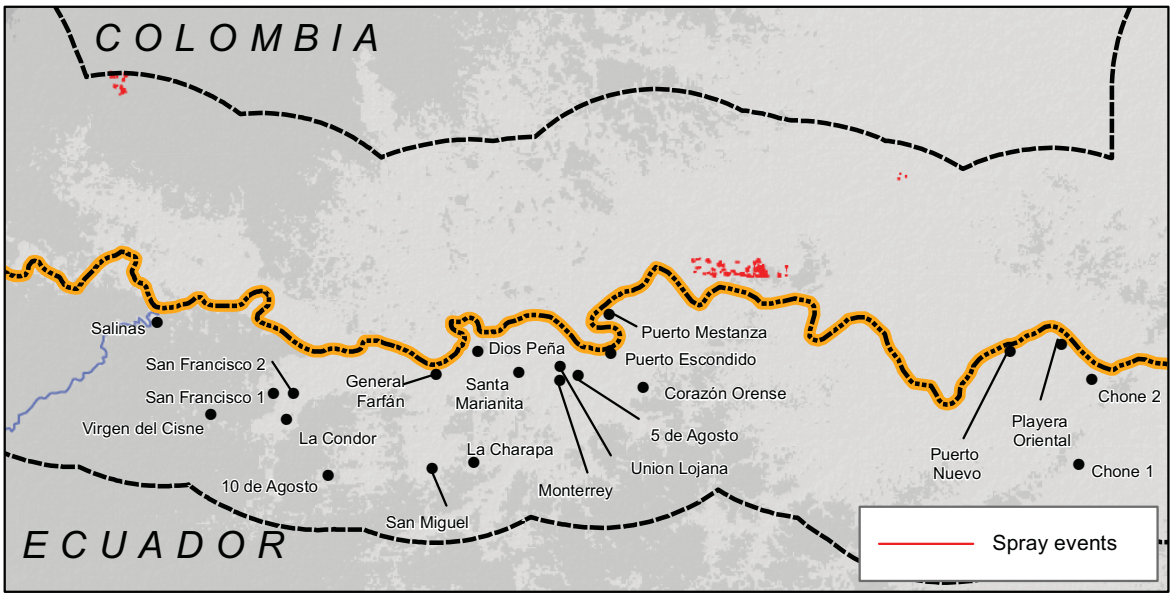


Figure 3.2

water or soil that much time after the sprayings were conducted. The statements are not the silver-bullet Colombia tries to make of them in order to quickly disregard four years of prior evidence of exposure and harm in Ecuador. Contrary to Colombia's misconstrued argument that Ecuadorian authorities "expressly and publicly stated that, up until December 2004"[472] no damage had occurred in Ecuador, the only conclusions reached were that no damage had been observed at the specific locations visited on the dates of the visits[473].

3.33 Once Colombia's attempt to make more out of Ecuador's inconclusive 2004 water and soil tests than they merit is exposed, Ecuador's case on harm for the years between 2001 and 2004 stands effectively unrebutted, except for Colombia's dismissive statements about the inherent unreliability of Ecuadorian *campesinos*.

3.34 The *Counter-Memorial* further attacks the witness statements on the alleged ground that they "are studiously vague as to the timing of the sprayings and locations where sprayings allegedly took place, making it impossible to check

[472] *See* CCM, Chap. 7, para. 7.2.

[473] *See, e.g.*, Memorandum of the Ecuadorian Foreign Ministry, 24 Dec. 2004. CCM, Vol. II, Annex 83 (stating that it was unaware of "sprayings on the Ecuador-Colombia border in the *past weeks*") (emphasis added).

these assertions against the documented record of spray missions"[474]. Colombia is wrong here, too.

3.35 In the first instance, it is ironic for Colombia to complain about the difficulty checking the witnesses' statements against "the documented record of spray missions". While Ecuador has no reason to doubt that Colombia has such records, they have been shared with neither Ecuador nor the Court. In its *Counter-Memorial*, Colombia admits to having such records[475], yet does not bother to produce them as part of its evidentiary showing. Given the discussion in Chapter 2 about what is revealed by the data Ecuador was able to obtain from the United States, Colombia's reticence is understandable.

3.36 In any event, what matters now is the extent to which Ecuador's witness statements coincide with the later-acquired spray data. As discussed further below, the correspondence between the two is impressively close. In Ecuador's view, this congruency lends even greater credibility to the witness statements. Put another way, the fact that the statements match the later-acquired spray data constitutes an *indicium* of the statements' reliability.

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[474] CCM, Chap. 7, para. 7.126.

[475] *See, e.g.*, CCM, Chaps. 4 & 7, paras. 4.64, 7.17, 7.172.

3.37 Colombia is also incorrect when it suggests that Ecuador's witness statements are anything less than crystal clear on the subject of "the locations where sprayings allegedly took place"[476]. To a person, Ecuador's witnesses specify exactly where they were when the sprayings took place. Witness 18, a resident of San Francisco 1, is typical in this respect. He states:

> "I remember the first time the sprayings occurred; I was clearing ground with my friend in preparation for planting watermelons, about a kilometre from the San Miguel River. At ten in the morning, they started spraying. At first I could hear the noise of the planes and then I began to smell a nasty odor in the air"[477].

3.38 As reflected on **Figures 2.13** and **2.14**, *all* the places the witnesses identified are located in very close proximity to the areas where the recently-acquired flight data confirm that sprayings were being conducted, and certainly well within the reach of the spray drift as predicted by Colombia's own model (corrected only for the actual flight parameters).

3.39 Colombia's assertion that the witness statements are "studiously vague" as to *when* the sprayings took place is similarly off the mark. In fact, a significant number of them refer specifically to the first sprayings as taking place in "2001".

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[476] CCM, Chap. 7, para. 7.126.

[477] Witness 18 Declaration, *op. cit*. EM, Vol. IV, Annex 204.

Witnesses 4 and 5 quoted already above are just two examples. Others who specifically referred to sprayings beginning in 2001 are cited in a footnote[478].

3.40 The fact that these witnesses do not refer to the specific month in 2001 is no reason to discredit their testimonies. It is an attribute of memory that exact dates become harder to recall as more time passes. And what is true generally is particularly true for the residents of the border area. As stated in Ecuador's *Memorial* and admitted in the *Counter-Memorial*, most residents of the border area are minimally educated subsistence farmers engaged in a daily struggle to put food on the table in a very remote region[479]. Others are indigenous peoples who still live largely in accordance with their ancient ways[480]. They cannot be viewed through the same lens as professionals in the developed world who clutch their day-planners wherever they go and then file them away for posterity.

3.41 Ecuador acknowledges that a number of the Sucumbíos witness statements (sworn in January 2009) refer to the first spray events as taking place

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[478] *See, e.g.*, Declaration of Witness 2, 16 Jan. 2009 (hereinafter "Witness 2 Declaration"). EM, Vol. IV, Annex 190; Witness 3 Declaration, *op. cit.* EM, Vol. IV, Annex 191; Witness 4 Declaration, *op. cit.* EM, Vol. IV, Annex 192; Witness 5 Declaration, *op. cit.* EM, Vol. IV, Annex 193; Declaration of Witness 9, 16 Jan. 2009 (hereinafter "Witness 9 Declaration"). EM, Vol. IV, Annex 197; Declaration of Witness 11, 16 Jan. 2009 (hereinafter "Witness 11 Declaration"). EM, Vol. IV, Annex 199.

[479] *See* EM, Chap. 2, para. 2.22; CCM, Chap. 2, para. 2.13.

[480] *See* EM, Chap. 2, paras. 2.20-2.21.

"seven or eight years ago"[481]. This too should engender no doubt. *First*, as just stated, it is unrealistic to expect perfect recall as to dates from any person years after the fact, much less the people who live along the Ecuador/Colombia border. *Second*, and more to the point, saying the sprayings began "seven or eight years ago" is factually correct. Since the statements were sworn in the first month of 2009, seven or eight years before is 2001 or 2002. *Third*, any apparent lack of precision can be understood given the frequency with which sprayings took place. As first described in Ecuador's *Memorial* and discussed again below, Colombia's spray planes revisited the Sucumbíos border region repeatedly in the years following 2001, including in the years 2002-2007 inclusive[482]. For example, the area within 10 kilometres of San Francisco 2 village was sprayed during at least 5 different months between 2001 and 2002, with repeated sprayings in the subsequent years[483]. Under the circumstances, with so many intervening spray events, it is not surprising that a witness did not give the precise month when the first such event occurred.

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[481] *See, e.g.*, Declaration of Witness 2, 16 Jan. 2009. EM, Vol. IV, Annex 190; Witness 3 Declaration, *op. cit.* EM, Vol. IV, Annex 191; Witness 9 Declaration, *op. cit.* EM, Vol. IV, Annex 197; Witness 11 Declaration, *op. cit*. EM, Vol. IV, Annex 199.

[482] Hansman & Mena Report, *op. cit.,* p. 11 *et seq*. ER, Vol. II, Annex 1. *See also* Figures 2.6 and 2.13.

[483] *See* Figures 3.1 and 3.3. *See also* Figure 2.56 and 2.13.

3.42 Colombia also attacks Ecuador's witness statements on the ostensible ground that they "lack ... any medical evidence or other substantiation"[484]. Here again, Colombia is viewing the matter through an inappropriate lens. The Ecuador-Colombia border is not The Hague. Hospitals, doctors' offices and pharmacies are not well-distributed throughout the region. Indeed, they are extremely rare[485]. Most of the time, and frequently even in the most severe cases, residents have nowhere to turn for medical assistance other than their families. As discussed in Ecuador's *Memorial*, infrastructure throughout the region is limited in the extreme. Roads are little more than dirt paths and public transportation, where it exists at all, is infrequent and unreliable[486]. Combined with the scarcity of medical facilities, it is extraordinarily difficult for ill people to seek the assistance of medical professionals.

3.43 This aspect of the *Counter-Memorial*'s argument rings particularly hollow given Colombia's repeated recognition of the remoteness, poverty and underdevelopment of the region. At paragraph 2.13, for instance, the *Counter-Memorial* states:

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[484] CCM, Chap. 7, para. 7.126.

[485] EM, Chap. 2, para. 2.26. *See also* Whitten et al. Report, *op. cit.,* p. 26 ("many Cofán people live far from health centers, which can be more than a day's travel from their homes".). *Ibid.* p. 49 (for the Awá "only San Lorenzo [hospital] has expertise in tropical-forest medicine. However, reaching San Lorenzo from some Awá communities can take up to several days (by foot and then by boat or by bus). Due to the time and cost of the journey, many illnesses go untreated".). *See also*, pp. 42-43 (describing the limited access to healthcare in Sucumbíos Province). ER, Vol. II, Annex 5.

[486] EM, Chap. 2, para. 2.24; Whitten et al. Report, *op. cit.,* pp. 12-13. ER, Vol. II, Annex 5.

> "Sucumbíos has traditionally been one of the most neglected and underdeveloped regions of Ecuador and was until recently virtually isolated from the rest of the country. As Ecuador itself acknowledges, the frontier region in general lacks basic infrastructure and basic sanitation and health services"[487].

Later, at paragraph 7.37, Colombia similarly states: "The fact that these groups of Ecuadorians [*i.e.*, those living along the border] live in precarious hygienic conditions and only have limited access to medical facilities is highly relevant for present purposes"[488].

3.44 Ecuador agrees; it is "highly relevant for present purposes". In particular, it is relevant precisely because it counters Colombia's argument that Ecuador's witness testimonies should not be credited because they are not supported by contemporaneous medical documentation. It is disingenuous of Colombia to insist on documentation that it acknowledges could not exist, through no fault of the victims.

3.45 It should be added that even the few medical facilities in northern Ecuador cannot be compared to those facilities with which counsel for Colombia may be familiar. The hospital at Lago Agrio, for example, which is located more than an hour's bus ride (at a cost of US$4-5 per person, which exceeds the daily income of much of the population) from the nearest frontier communities, is often

[487] CCM, Chap. 2, para. 2.13.

[488] CCM, Chap. 7, para. 7.37.

overcrowded, out of essential medicines, and in ill repair[489]. The *Counter-Memorial*'s arguments about the lack of contemporaneous medical evidence is thus a red herring that ignores what Colombia itself admits are the realities of life in the frontier region.

3.46 Nevertheless, and notwithstanding all of the obstacles, some contemporaneous medical records do exist. Following the sprayings in August and September of 2002 a group of doctors and medical students travelled to the border villages of Sucumbíos that had been affected by the sprayings and documented the local residents' resulting symptoms. These symptoms were recorded in individual medical inquests of residents in each village visited[490]. The consistency in the health impacts reported in the medical inquests is compelling. The evidence not only shows the repeated occurrence of the same symptoms across the various towns affected on the border of Ecuador following the spray; notably, it also reflects the same symptoms reported within Colombia following local spraying[491], as further discussed in Section III below. In village after village, the medical inquests reveal a consistent series of ailments following the appearance of the spray planes – skin irritation and rashes, gastro-intestinal

[489] *See* Whitten et al. Report, *op. cit.,* p. 26. ER, Vol. II, Annex 5.

[490] Ecuadorian Medical Inquests (Sept. – Nov. 2002). ER, Vol. III, Annex 31.

[491] *See* Colombian Medical Inquests (Sept. 2002). ER, Vol. III, Annex 30.

problems, respiratory problems, headaches, fever, and eye irritation[492] – the same symptoms predicted in the spray chemicals' warning labels and expected from improper exposure to the spray[493].

B. SUCUMBÍOS 2002

3.47 The flight data Ecuador secured from the U.S. Government show that after the end of heavy sprayings along the Sucumbíos-Putumayo border in January 2001, Colombia conducted some limited sprayings near Sucumbíos in February, March and April that year.

3.48 Aerial spraying along the border resumed in earnest in November 2001 and lasted through a significant portion of 2002. **Figure 3.3** depicts the heavy spraying that took place in November 2001 to January 2002, and then again between August and October 2002. As depicted, Colombia conducted massive spray operations across huge swaths of Putumayo that directly abut Ecuador's Sucumbíos Province, including the Cofán-Bermejo Ecological Reserve.

3.49 The data also show that in the two-month period between December 2001 and January 2002, Colombia conducted 10,487 spray flights within 10 kilometres

[492] *See* Ecuadorian Medical Inquests (Sept. – Nov. 2002). ER, Vol. III, Annex 31.

[493] *See supra* Chap. 3, para. 3.25; Chap. 2, paras. 2.27-2.41; EM, pp. 132-152.

Spray Events Within 10 Kilometres of Ecuador's Sucumbíos Province (November 2001 - October 2002)

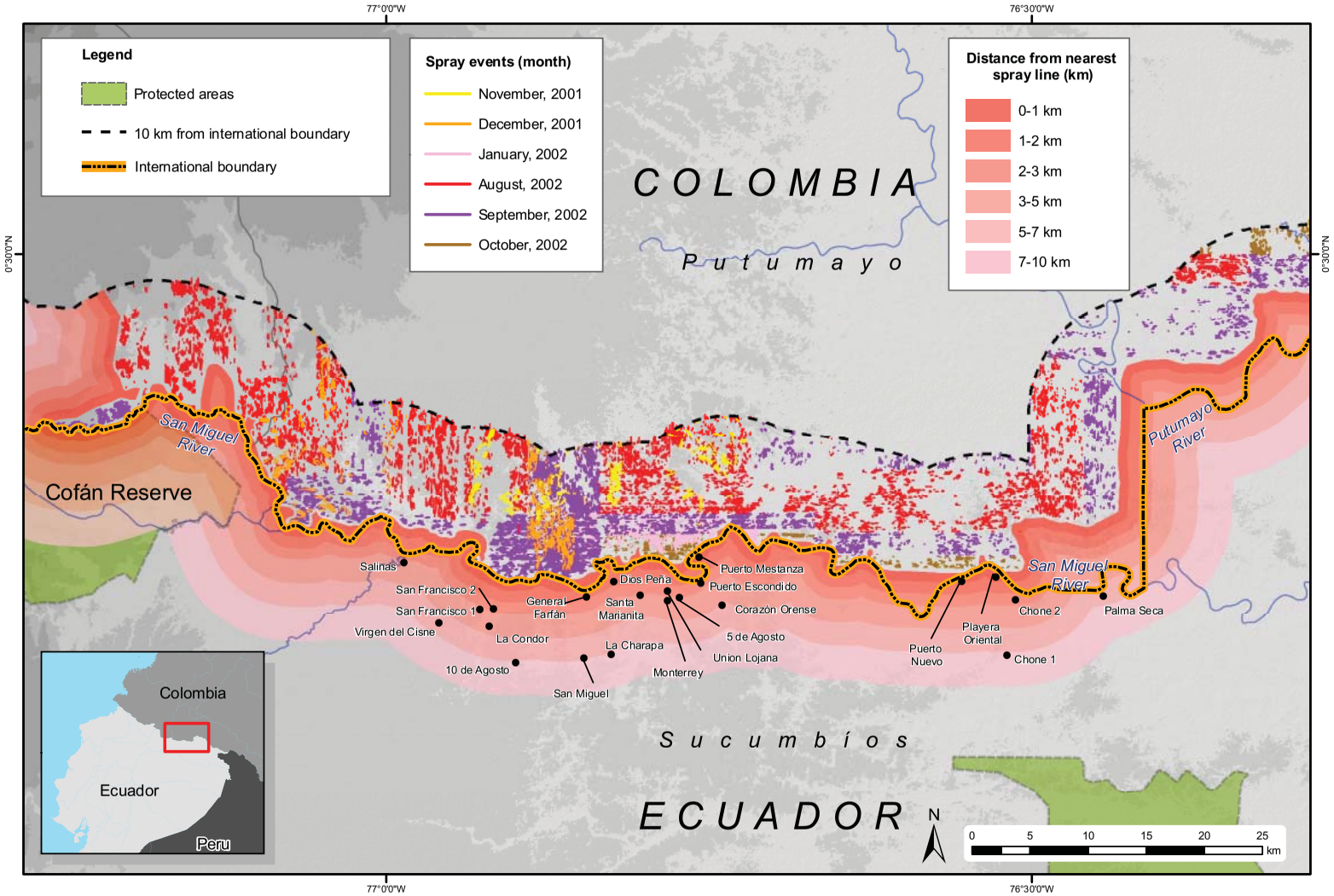

Figure 3.3

of the Ecuador border[494]. Between August and October 2002, Colombia conducted an additional 28,121 flights in the same area, during more than 15,000 of which it similarly disregarded the speed requirement that Colombia deemed necessary to prevent spray drift[495].

3.50 Tellingly, what the flight data show is described in the witness statements, which were submitted to the Court long before the flight data became available to Ecuador. Witness 20 of Puerto Escondido, which is located on the river border, for example, describes the first spraying during this time:

> "The first spraying that I remember was in the year two thousand and two. It was late in the morning. I was with the pigs by the plantain fields when I saw the planes. There were also helicopters. The planes were flying like vultures fighting for food, going up and down repeatedly. They were dropping white liquid that extended throughout the air. In some areas it fell directly, in others it drifted with the wind. It smelled bad, I could barely stand it. I felt the mist go into my eyes. My eyes became sticky. I started to feel sick and I immediately returned home"[496].

3.51 The consequences began almost immediately and, over time, affected his health, the health of children, and his farm:

> "When I got home, I shouted to my children to go into the house because they were outside playing, watching the planes. Still, a few days later my seven children had stomach aches and diarrhea. Before, they were healthy. They had never been sick like this

[494] Hansman & Mena Report, Appendix 3, *op. cit.,* p. 28. ER, Vol. II, Annex 1.

[495] *Ibid.*

[496] Declaration of Witness 20, 16 Jan. 2009 (hereinafter "Witness 20 Declaration"). EM, Vol. IV, Annex 206.

> before; also, the other children in the community became sick with the same thing. I did not know what to give them, except for chamomile tea. The plants died a week or two after the sprayings. The maize started to bend. I had three hectares of yucca and I was not able to harvest any; it all dried up. I also had ten hectares of coffee and cocoa, all of which turned yellow"[497].

Other witness statements that specifically refer to sprayings in 2002 are cited in the footnote[498].

3.52 The *Counter-Memorial* attacks Witness 20's testimony directly but does nothing more than argue that "all of this has nothing to do with the characteristics of glyphosate"[499]. Like so much of the *Counter-Memorial*, this argument assumes its own conclusion. The spray could not have caused the harm described, Colombia says, because the spray does not cause that kind of harm! Besides being circular, it is inaccurate.

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[497] *Ibid.* EM, Vol. IV, Annex 206.

[498] Salinas: Witness 2 Declaration, *op. cit.* EM, Vol. IV, Annex 190; Witness 3 Declaration, *op. cit*. EM, Vol. IV, Annex 191; Witness 4 Declaration, *op. cit*. EM, Vol. IV, Annex 192; Corazon Orense: Witness 9 Declaration, *op. cit*. EM, Vol. IV, Annex 197; San Francisco II: Declaration of Witness 12, 16 Jan. 2009 (hereinafter "Witness 12 Declaration"). EM, Vol. IV, Annex 200; Declaration of Witness 13, 15 Jan. 2009 (hereinafter "Witness 13 Declaration"). EM, Vol. IV, Annex 201; Declaration of Witness 17, 16 Jan. 2009 (hereinafter "Witness 17 Declaration"). EM, Vol. IV, Annex 203; Puerto Escondido: Witness 20 Declaration, *op. cit*. EM, Vol. IV, Annex 206; Declaration of Witness 22, 16 Jan. 2009 (hereinafter "Witness 22 Declaration"). EM, Vol. IV, Annex 208; Declaration of Witness 23 (hereinafter Witness 23 Declaration"), 16 Jan. 2009. EM, Vol. IV, Annex 209; Awá: Declaration Witness of 40, 20 Feb. 2009 (hereinafter "Witness 40 Declaration"). Annex 223; Declaration of Witness 41, 20 Feb. 2009 (hereinafter "Witness 41 Declaration"). EM, Vol. IV, Annex 224.

[499] CCM, Chap. 7, para. 7.137.

3.53 Before proceeding further, it bears mention here that, as in other parts of the *Counter-Memorial*, Colombia plays a shell-game with the facts. It says that the effects described have nothing to do with "the characteristics of glyphosate". Whether or not that is strictly true (it is not), Colombia's statement does not fairly meet the evidence. A significant part of the problem is that: (a) the spray mixture is not composed exclusively of glyphosate; and (b) Colombia has never fully disclosed exactly what else is in it. Thus, by trying to focus the Court exclusively on the ostensible effects of glyphosate as such, Colombia clearly hopes to elide the larger question of the composition and toxicity of the spray mixture as a whole, and of the other elements of the mixture that have never been fully disclosed.

3.54 That said, the fact of the matter is that the effects Witness 20 (and others) describe are exactly the attributes of chemical herbicide exposure. Eye irritation, headaches, dizziness and gastro-intestinal irritation, along with the yellowing and wilting of plants, are all classic and expected consequences of exposure to glyphosate-based herbicides[500]. Colombia's own *Counter-Memorial* acknowledges that the mixture "may cause temporary symptoms, such as eye or skin irritation"[501]. In addition, Colombia's own National Health Institute has linked POEA (an ingredient Colombia has admitted to including in the spray

[500] *See supra* para. 3.25; EM, pp. 132-152.

[501] CCM, Chap. 7, para. 7.179.

mixture) to gastrointestinal damage, breathing difficulties, and other symptoms experienced by the border residents[502]. And the witnesses' description of the yellowing and death of multiple crops – maize, yucca, coffee and cocoa – 1 to 2 weeks after the spraying, is precisely what one would expect from exposure to a glyphosate-based herbicide[503].

3.55 The testimonies of Witness 20 and other witnesses who specifically refer to sprayings in 2002 are amply supported by contemporaneous accounts. *El Universo* reported on 7 September 2002 that Ecuadorian residents in the border towns of Sucumbíos, including Puerto Nuevo, confirmed having witnessed spray planes operating across the river the week before[504]. The reporters personally observed the same skin rashes on children exposed to the spray in Colombia[505] as those described in the Ecuadorian witness statements[506].

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[502] Government of Colombia National Health Institute, *Evaluation of Effects of Glyphosate on Human Health in Illicit Crop Eradication Program Influence Zones*, p. 5 (2003) (hereinafter "*Evaluation of Effects of Glyphosate on Human Health*"). EM, Vol. II, Annex 96*; see also supra*, Chap. 2, para. 2.45.

[503] Weller Report, *op. cit.,* pp. 3-6. ER, Vol. II, Annex 3.

[504] "Hunger and Misery from Fumigations", EL UNIVERSO (Guayaquil, 7 Sept. 2002). ER, Vol. IV, Annex 68.

[505] *Ibid.*

[506] *See, e.g.*, Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 190; Witness 3 Declaration, *op. cit*. EM, Vol. IV, Annex 191; Witness 4 Declaration, *op. cit*. EM, Vol. IV, Annex 192; Witness 9 Declaration, *op. cit*. EM, Vol. IV, Annex 197; Witness 12 Declaration, *op. cit*. EM, Vol. IV, Annex 200; Witness 13 Declaration, *op. cit*. EM, Vol. IV, Annex 201; Witness 17 Declaration, *op. cit*. EM, Vol. IV, Annex 203; Witness 22 Declaration, *op. cit*. EM, Vol. IV, Annex 208; Witness 23 Declaration, *op. cit*. EM, Vol. IV, Annex 209; Declaration of Witness 28, 17 Feb.

3.56 Twelve days later, on 19 September 2002, *El Universo* published another story about more spraying near the border "by six planes and eight helicopters" that caused harm in Ecuador, including the village of Chone 2, located less than 1 kilometre from the border[507]. (The location of Chone 2 is depicted on **Figure 3.3** above). The reporter interviewed a Mr. Ángel Encarnación, who watched the aircraft spraying across the river in Colombia[508]. The story also quotes a Mr. José Aldaz as saying that after the spraying, "the Ecuadorian plantations of sugarcane, corn, plantains, coffee, fruits, yucca and other crops have lost their natural color and as a result have been damaged"[509].

3.57 The human health effects of the sprayings recounted in the witness statements annexed to the *Memorial* are also reflected in contemporaneous medical inquests of residents in Chone 2 taken on 12 September 2002. For example, Ms. Isabel Campoverde and her husband both fell ill following the spraying, suffering from throat irritation, headache, eye irritation and a skin rash[510]. Similarly, Ms. Obdulia Pineda, also of Chone 2, suffered from eye irritation and stress, and her husband had both eye problems and respiratory

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2009 (hereinafter "Witness 28 Declaration"). EM, Vol. IV, Annex 212; Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223; Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224.

[507] "Farmers Against Fumigations", EL UNIVERSO (Guayaquil, 19 Sept. 2002). ER, Vol. IV, Annex 69.

[508] *Ibid.*

[509] *Ibid.* ER, Vol. IV, Annex 69.

[510] Medical Inquest of Ms. Isabel Campoverde (12 Sept. 2002) in Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31.

distress. Their children were affected too: their three year-old child experienced stomach problems and their 13 year-old developed a skin rash[511].

3.58 Contemporaneous press accounts show that families in nearby villages were experiencing the same harms. On 26 September 2002, the Ecuadorian daily, *La Hora*, reported that residents of the border villages, including Santa Marianita, Monterrey, Puerto Mestanza and Puerto Nuevo, had watched as Colombian spray planes crossed over the border one week earlier[512]. Residents affirmed "the damage caused to crops, animals, and the human beings that inhabit this region as a result of the Colombian government fumigating in Ecuadorian territory"[513]. The consequences included the following harm to people: "many children have suffered skin rashes and a type of uncontrollable allergy"; harm to plants: "the type of fumigating agent employed has caused damages to all the vegetation, especially to pastures, rice, cacao, plantain, coffee, and sugar cane, causing a true

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[511] Medical Inquest of Obdulia Pineda (12 Sept. 2002) in Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31. *See also* Medical Inquest of Rosa Margarita Jimenez (12 Sept. 2002) (symptoms included stomach problems, throat and eye irritation, insomnia, and chills); Medical Inquest of Ma Encarnación (12 Sept. 2002) (symptoms included stomach problems, dizziness, eye and skin irritation, and a cough); Medical Inquest of Isabel Campoverde (12 Sept. 2002) (symptoms included throat irritation, eye irritation, a skin rash, and headaches); Medical Inquest of Alicia Calero (12 Sept. 2002) (symptoms included eye irritation and headaches); Medical Inquest of Maria Ilbay (12 Sept. 2002) (symptoms included stomach problems, eye irritation, skin irritation, headaches, and dizziness) in Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31.

[512] "Ecuadorians Demand Compensation", LA HORA (Quito, 26 Sept. 2002). ER, Vol. IV, Annex 70.

[513] *Ibid.*

desert in the midst of the jungle"; and harm to animals: "the animals that have been most affected are barnyard fowl"[514].

3.59 Shortly thereafter, on 8 October 2002, another article was published in *El Comercio*, in which the reporter visited the areas hit by the recent sprayings on both the Colombian and Ecuadorian sides of the border. On the Colombian side, the reporter saw "[d]ozens of *guarumos*, native trees in the areas fumigated, are barely able to support their enormous leaves. Others, with completely barren branches, look like enormous candlesticks. The banana trees are almost falling and their stalks barely support them. The impact of fumigations is so strong that even the grass has been completely destroyed"[515]. Crossing the border into Ecuador he found a similar, though less extreme, sight in villages including General Farfán: "Plantain plants starting to show dry leaves can be seen from the road. Walking along the parcels, you can see how the yucca leaves are wilted, how the corn leaves look yellowed and wrinkled"[516]. The reporter details how, following sprayings witnessed by local residents 15 days earlier, whole families

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[514] *Ibid.*

[515] "Glyphosate Affects Crops in Sucumbíos", EL COMERCIO (Quito, 8 Oct. 2002). ER, Vol. IV, Annex 71.

[516] *Ibid.*

had became ill with headaches, dizziness, stomach aches and skin rashes; plants dried out; and animals became sick or slowly starved to death[517].

3.60 Just over a week after this article was published, an official from the Sucumbíos provincial government wrote a letter to the Ecuadorian Ministry of the Environment in which he reported that the day before (15 October 2002) he journeyed to the villages affected to personally verify the damage. He confirmed that:

> "as a result of the fumigations the orito, plantain, banana, corn, and yucca crops, and, in general, all the different agricultural crops that are basis of sustenance for peasants in the area were burnt. Similarly, the fish in pools, which comprise part of the sector's industry, have died. Barnyard fowl has also been affected. As a result, negative effects exist which harm the inhabitants of the Border with Colombia. I was also able to confirm the effects caused to individuals' health, such as itchiness, boils on their bodies, skin affectations and respiratory problems"[518].

3.61 The medical inquest records confirm that the health effects of the 2002 sprayings were widespread throughout the border region. For example, Mr. Italo Ramón Bene Cosa, a resident of General Farfán, located less than a kilometre from the border, reported fever-like symptoms, head-ache, eye irritation, coughing and intense skin irritation[519]. He recounted that in late September he

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[517] *Ibid.*

[518] Letter from Victor Velasco Tapia, Government of Sucumbíos, to Lourdes Luque, Minister of Health (16 Oct. 2002). ER, Vol. III, Annex 33.

[519] Medical Inquest of Ramon Bene Cosa Italo (13 Nov. 2002) in Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31.

had seen six spray planes escorted by four helicopters[520]. As he worked outside on his farm, just 600 metres from the border, his face began to break out in a rash, and then became hot and swollen[521].

3.62 In the neighbouring town of Puerto Nuevo, itself just abutting the river border, several residents reported very similar ailments following the September 2002 sprayings: stomach aches, headaches, dizziness, eye irritation, throat irritation and skin rashes[522]. As one resident put it, all this occurred after they "received 'rain water' from the planes"[523].

3.63 Other towns in which the occurrence of harm is documented in the medical inquest forms include Palma Seca and Playera Oriental,[524] both of which are less than 2 kilometres from the border and close to the 2002 sprayings as disclosed in the recently-obtained spray flight data[525].

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[520] *Ibid.* ER, Vol. III, Annex 31.

[521] *Ibid.*

[522] Medical Inquest of Zacarias Garcia Chavez (12 Sept. 2002); Medical Inquest of Jose Hilberto Reyes Ramirez (12 Sept. 2002); Medical Inquest of Jose Felix Guerra Rodriguez (12 Sept. 2002); Medical Inquest of Lucelia Torres Garcia (12 Sept. 2002); Medical Inquest of Edith Garcia (12 Sept. 2002) in Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31.

[523] Medical Inquest of Lucelia Torres Garcia (12 Sept. 2002) in Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31.

[524] *See* Ecuadorian Medical Inquests (Sept.–Nov. 2002). ER, Vol. III, Annex 31.

[525] *See* Figure 3.3.

3.64 The accounts of the harm resulting from the sprayings are still further corroborated in the report issued by representatives of several Ecuadorian NGOs who visited various communities in the border area in late September 2002, to investigate reports of the damage for themselves. In the first two Ecuadorian border towns visited, Playera Oriental and Chone 2, "evident damage from the fumigation of 6 September 2002 on the Colombian side of the banks of the San Miguel River was observed"[526]. Similarly, in the Ecuadorian village facing the Colombian town of La Pedregosa across the river, "damage was found in the banana plantations and other crops, which showed signs of chlorosis (yellowing), as a result of the proximity of fumigations in Colombia. The accounts pointed out that these impacts stemmed from the fumigations done on the Colombian side between 30 August and 6 September 2002"[527]. Ecuador first cited to this report in the *Memorial*[528]. In response, Colombia says only that it is "wholly unsubstantiated"[529]. Given the corroborative evidence Ecuador has proffered, one might be justified in wondering at what point exactly Colombia would accept any evidence as "substantiated".

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[526] Association of American Jurists et al., *Report on Verification Mission: Impacts in Ecuador of Fumigations in Putumayo as Part of Plan Colombia*, pp. 7-8 (Oct. 2002). ER, Vol. III, Annex 32.

[527] *Ibid.*, p. 8.

[528] EM, Chap. 6, para. 6.14, n. 417.

[529] CCM, Chap. 7, para. 7.151.

3.65 In any event, the truth of the events recounted in the witness statements and the NGO and press reports is compellingly affirmed by the then-UN Special Rapporteur on the Right to Health, Mr. Paul Hunt, who issued a press statement and a report on the subject of Colombia's aerial sprayings. This unquestionably impartial observer visited the border area, interviewed the inhabitants, reviewed relevant materials, including those of a scientific and technical nature, and concluded that the residents' descriptions of harm were credible and reliable. Perhaps for that reason, the *Counter-Memorial* entirely fails to come to grips with the Special Rapporteur's findings.

3.66 The Special Rapporteur travelled to the region in May 2007 in order to investigate the reports of harm for himself. In his own words, the "focus of my mission [to Ecuador] was aerial spraying of glyphosate, combined with additional components, along the Colombia-Ecuador border"[530]. His assessment involved reviewing all pertinent sources of evidence: "The Mission . . . reviewed the existing scientific evidence, took personal testimonies, consulted with experts, collected additional information – and examined all of this material through the lens of the human right to health"[531]. In other words, the Special Rapporteur took all the steps necessary to make reliable findings of fact, including visiting

[530] Paul Hunt, UN Special Rapporteur on the Right to the Highest Attainable Standard of Health, Closing Remarks to the Press, Quito, Ecuador (18 May 2007). ER, Vol. IV, Annex 107.

[531] *Ibid.*

communities in the northern border zone[532]. His conclusions thus deserve special attention, particularly insofar as they validate the *campesinos*' descriptions of the harm that they experienced and observed. In that regard, Mr. Hunt specifically determined that: "There is *credible, reliable evidence* that the aerial spraying of glyphosate along the Colombia-Ecuador border *damages the physical health of people living in Ecuador*"[533]. Based on this finding of "credible" and "reliable evidence", Mr. Hunt concluded "there is an overwhelming case that the aerial spraying of glyphosate along the Colombia-Ecuador border should not re-commence"[534]. Indeed, the Special Rapporteur found the evidence so compelling that he concluded "*there is no doubt* in my mind that Colombia should not recommence aerial spraying of glyphosate on its border with Ecuador . . . Colombia should respect a ten-kilometre no-spray zone along the border"[535].

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[532] *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, A/HRC/7/11/Add.3, para. 6 (4 Mar. 2007). EM, Vol. II, Annex 31.

[533] *Ibid.* (emphasis added).

[534] Paul Hunt, UN Special Rapporteur on the Right to the Highest Attainable Standard of Health, Closing Remarks to the Press, Quito, Ecuador (18 May 2007) (emphasis added). ER, Vol. IV, Annex 107.

[535] *Ibid. See also Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, U.N. Doc. A/HRC/7/11/Add.3, para. 17 (4 Mar. 2007). ("While in Ecuador, the Special Rapporteur's preliminary view was that there was credible and reliable evidence that the aerial spraying of glyphosate along the border damages the physical and mental health of people living in Ecuador. The Special Rapporteur's preliminary conclusion was that the evidence provided during the mission was sufficient to call for the application of the precautionary principle and that, accordingly, Colombia should not recommence aerial spraying in the 10-km border zone with Ecuador, thus ensuring conformity with its international human rights responsibilities".). EM, Vol. II, Annex 31.

3.67 The Special Rapporteur's findings are all the more notable because they were made after affording the Colombian government an opportunity to present its side of the story. As part of his investigation, the Special Rapporteur visited Colombia and conducted discussions about the aerial spraying programme with senior Colombian officials, including the Vice-President, the Deputy Minister of Health and the Director of the Anti-Narcotics Police, among others[536]. Nothing he heard in Colombia altered his determination that "credible and reliable evidence" demonstrated that "aerial spraying of glyphosate along the Colombia-Ecuador border damages the physical health of people living in Ecuador"[537].

3.68 The *Counter-Memorial* seems wary of reminding the Court about the Special Rapporteur's report. Thus, Colombia adopts what might charitably be characterized as a hit-and-run approach, devoting just one paragraph to it. And even then, it does not dispute any of the Special Rapporteur's findings. It argues only that they are irrelevant because they do not purport to be "a scientific assessment of the effects of the fumigations"[538].

3.69 Here, as in so many places, Colombia twists the truth. True, the report does state that the Special Rapporteur's visit "was not a scientific mission", but it

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[536] *Ibid.,* paras. 6-7. EM, Vol. II, Annex 31.

[537] *Ibid.*

[538] CCM, Chap. 7, para. 7.118.

also notes that he "reviewed the existing scientific evidence" and "consulted with experts"[539]. More to the point, the importance of the Special Rapporteur's findings does not lie in whether it can be labelled "scientific". What matters is that the individual specifically charged by the United Nations with responsibility for these issues explicitly determined that all the evidence taken as a whole – including the scientific evidence that he considered – credibly and reliably supported the conclusion that the sprayings were causing harm in Ecuador. And he specifically credited the testimonies of the Ecuadorian *campesinos* whom he interviewed, declaring them "credible" and "reliable"[540].

3.70 Viewed in light of the spray flight data, especially insofar as they show Colombia's wanton disregard for its own operational parameters, the Special Rapporteur's findings are more than corroborated. As discussed above, the data confirm that Colombia was conducting massive spray operations along the border with Sucumbíos in late 2000/early 2001 and in 2002 at exactly the time that the other evidence, including NGO reports and eyewitness statements, indicate that harm materialized there[541]. The Special Rapporteur's findings thus constitute one

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[539] *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, U.N. Doc. A/HRC/7/11/Add.3, para. 10 (4 Mar. 2007). EM, Vol. II, Annex 67.

[540] *See supra* Chap. 3, para. 3.66.

[541] *See supra* Figures 3.1 and 3.3.

more highly probative element underscoring the validity and veracity of Ecuador's case.

3.71 A second UN Special Rapporteur, the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, made similar findings during his mission to Ecuador in 2006, especially in regard to the special harms suffered by indigenous peoples as a result of Colombia's aerial sprayings along the Ecuadorian border[542].

1. The Kichwa and Cofán of Sucumbíos

3.72 With respect to the special harms caused to indigenous peoples, Colombia is hard-pressed to dispute that their unique communal structures, modes of living, spiritual traditions, and inter-connection with the land, make them particularly susceptible to the health and environmental impacts that result from exposure to the chemical spray mixture. In response to Ecuador's evidence, Colombia simply relies on the same refrain used throughout its *Counter-Memorial*: "the time is vague, the living conditions are precarious, and we want more evidence". The hollowness of this robotic response has already been addressed at paragraphs 3.23 to 3.46 above. Colombia accepts that the problems faced by the indigenous

[542] *Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, Rodolfo Stavenhagen: Mission to Ecuador (25 April-4 May 2006)*, U.N. Doc. A/HRC/4/32/Add.2, paras. 28-34 (28 Dec. 2006). EM, Vol. II, Annex 30.

communities along the border are "real and urgent" but prefers to side-step the evidence and blame them on something else[543]. This approach simply doesn't work. The same confluence of evidence that demonstrates the harm caused by Colombia's aerial spraying elsewhere in the border regions of Ecuador confirms the particular harms suffered by the indigenous communities during the same time periods.

3.73 For the Kichwa people residing along the border of Sucumbíos, the harm began with the initial sprayings in late 2000/early 2001[544]. A July 2001 report, in which delegates from CONAIE had travelled to the Kichwa village of San Francisco 2, located approximately 3 kilometres from the border, to document the effects of the sprayings, already describes "the departure of the shamans" from the village as "a clear indication of the cultural impact on bordering communities"[545]. The witness statement by Ms. Blanca Chancosa, a Kichwa leader and member of the observation mission, explains the critical role that

[543] CCM, Chap. 9, para. 9.155.

[544] *See* Figure 3.1; Hansman & Mena Report, *op. cit.,* p. 14. ER, Vol. II, Annex 1.

[545] Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 22 (19-22 July 2001). EM, Vol. IV, Annex 162.

shamans, or *yachaks*, play as the spiritual leaders and medicinal healers in the Kichwa community[546].

3.74 The 2001 CONAIE report explains that the shamans had left "because their healing plants have been contaminated and they can no longer use them to cure people"[547]. Underscoring the gravity of this event, the report concludes, "[t]he cultural impact of the fumigations on this community has been enormous"[548].

3.75 The CONAIE report observes that the harms caused by Colombia's aerial sprayings to the Cofán, Kichwa, and Shuar nationalities of Ecuador were in common with those experienced by numerous indigenous communities that had "seen their collective rights violated by indiscriminate sprayings over their territories in Colombia"[549]. The threat was so great and so common, that in April 2002 the indigenous coastal tribes from both Ecuador and Colombia held their

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[546] Declaration of María Blanca Chancosa Sánchez, 14 Jan. 2009, para. 3. EM, Vol. IV, Annex 187. The report, written by experts on the indigenous communities of northern Ecuador, found at Annex 5, further describes the shamans' role in maintaining the community's traditions and protecting the health of its people. Whitten et al. Report, *op. cit.,* p. 27. ER, Vol. II, Annex 5.

[547] Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 13 (19-22 July 2001). EM, Vol. IV, Annex 162. *See also ibid*., p. 22.

[548] *Ibid.*

[549] *Ibid.*, p. 22.

first binational meeting in history to discuss their shared experience of the sprayings[550].

3.76 The extent of harm that year was notable – so notable that, belying Colombia's attempt to depict the indigenous peoples as time-challenged, the indigenous Kichwa residents cite to 2002 as a particularly intense year of aerial spraying and adverse consequences therefrom[551]. A 2003 report recording the impacts in the Kichwa community of Yana Amarum, explains that the community was "just recovering from the effect of the sprayings in July, August and September 2002"[552]. The spray flight data for 2002, shown in **Figure 3.3** above, confirms that the sprayings in that year and in that location were quite intense and close to the Kichwa communities. The available evidence on the spray mixture during that time shows that in 2002 the spray was particularly toxic – so toxic that the formulation had to be changed[553]. The evidence is not only consistent on the locations and dates of the sprayings near the Kichwa communities, but also on the special harms suffered as reflected in the witness testimonies.

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[550] "Binational Meeting of Indigenous Communities – Plan Colombia terrorizes the communities", LA HORA (7 Apr. 2002). ER, Vol. IV, Annex 65.

[551] *See, e.g.*, Witness 12 Declaration, *op. cit*. EM, Vol. IV, Annex 200.

[552] Ecuadorian Ministry of Environment et al., *Impacts in Ecuador by the Fumigations Carried Out in the Putumayo Province under Plan Colombia*, pp. 17-18 (July 2003) (hereinafter "Impacts in Ecuador by the Fumigations Carried Out in the Putumayo Province, 2003"). EM, Vol. IV, Annex 166.

[553] *See supra* Chap. 2, para. 2.22.

3.77 The Kichwa people are particularly reliant on plants for their sustenance, their medicine, and their cultural and spiritual traditions[554]. The 2002 sprayings and destruction of plants in and around the Kichwa villages thereby caused especially significant harm. Most immediately, the destruction of plants left the Kichwa without medicine to treat the ailments caused by the spray mixture. The report provided by experts on the indigenous communities of northern Ecuador, explains the critical function that local plants serve in Kichwa medicinal practice[555]. As illustrated by a Kichwa mother in her witness statement, when she and her children became ill following the 2002 sprayings – with eye irritation, vomiting, diarrhea and headaches (the typical symptoms of exposure to glyphosate-based herbicides and their adjuvants) – she could not use or treat her children with the traditional medicine "passed from parents to children" as the cure for diarrhea[556]. She explains that "with the sprayings, the plants have dried up and we can no longer prepare natural remedies"[557].

3.78 The same Kichwa mother explains that her crops of maize, coffee, plantain and cacao all "dried up" after the 2002 spraying, leaving "no food for

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[554] *See* Whitten et al. Report, *op. cit.,* pp. 29-30. ("The Amazonian Kichwa are renowned for their extensive knowledge of hundreds of useful plant species, many of which are medicinal".). ER, Vol. II, Annex 5.

[555] *Ibid.*

[556] Witness 12 Declaration, *op. cit*. EM, Vol. IV, Annex 200.

[557] *Ibid.*

[her] children"[558]. As further detailed by experts in the anthropology of the Kichwa people, the Kichwa maintain many of their traditional agricultural practices, "making them heavily reliant on environmental resources for their well-being" and particularly vulnerable to environmental changes[559]. With the 2002 sprayings, the Kichwa in the community of Yana Amarum saw their primary food crops, including their staple food source, yucca or manioc, turn yellow and die. Kichwa resident Witness 28, explains that in Yana Amarum "the situation was very serious, because these plants are the basis of our diet. After the sprayings, we had nothing to eat"[560].

3.79 With the integral aspects of the Kichwa life damaged by Colombia's aerial sprayings and "nothing to harvest", Witness 28, like other Kichwa before and after him, left to live elsewhere – leaving the indigenous community and its traditions behind[561].

3.80 Another indigenous group, the Cofán, who also reside on the Sucumbíos border, fared no better than the Kichwa. Approximately 1,200 Cofán people live in 13 communities in Ecuador's Sucumbíos province, including within the Cofán-Bermejo Ecological Reserve. Experts on the Cofán people explain that "the

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[558] *Ibid.*

[559] Whitten et al. Report, p. 26. ER, Vol. II, Annex 5.

[560] Witness 28 Declaration, *op. cit*. EM, Vol. IV, Annex 212.

[561] *Ibid.*

Cofán rely heavily on forest resources for their culture, spiritual traditions, and livelihoods. Therefore, the survival of this important indigenous group depends upon continuous access to the healthy and intact environments . . . "[562]. As explained in Cofán Witness Statement 31, "[f]or the Cofán, nature is very important, she provides us with everything that we need to live . . . if nature gets sick, we also get sick; our life depends on nature"[563].

3.81 The spray flight data from 2002, shown in **Figure 3.3,** demonstrate the extent and proximity of Colombia's sprayings to the Cofán-Bermejo Ecological Reserve, where Cofán have resided since pre-colonial times[564]. In 2002, there were more than 8,950 spray flights within 10 kilometres of the Reserve[565]. As indicated in Chapter 2, between 2000 and 2008 there were more than 12,400 spray flights within 10 kilometres of the Reserve, and more than one thousand within just 2 kilometres[566].

3.82 The Cofán people produce the great majority of their food directly from the forest environment[567]. Following the sprayings, the staple crops on which

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[562] Whitten et al. Report, *op. cit.,* p. 17. ER, Vol. II, Annex 5.

[563] Declaration of Witness 31, 27 Feb. 2009 (hereinafter "Witness 31 Declaration"). EM, Vol. IV, Annex 215.

[564] Whitten et al. Report, *op. cit.,* p. 17. ER, Vol. II, Annex 5.

[565] Hansman & Mena Report, *op. cit.,* Appendix 3, p. 28. ER, Vol. II, Annex 1.

[566] *Ibid.,* p. 14.

[567] *See* Whitten et al. Report, *op. cit.,* pp. 20-21. ER, Vol. II, Annex 5.

they relied were dead or dried up[568]. The animals on which they base their daily diet were also dead or gone – as one witness recounts, following the spraying they found the birds dead on the ground, a guanta whose hair had fallen off, and almost no fish in the water[569]. The harm goes beyond damage to the Cofán's food sources; it has also impacted their medicinal and spiritual practices. As explained in the anthropological expert report: "Cofán medicinal practices also depend upon residence in a relatively intact environment"[570]. They use as many as 250 different plant species for medicinal purposes[571]. But, as described in the Cofán witness statements, many of the medicinal plants were destroyed upon exposure to the spray[572]. The debilitation of the medicinal plants left no remedies for the Cofán who were sickened (including skin irritation, vomiting, throat irritation, and diarrhea) by exposure to the chemicals deposited by Colombia's spray planes[573].

3.83 Many of the Cofán have not been able to withstand the damage to their way of life caused by Colombia's aerial spraying, and have moved away from the

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[568] *See* Declaration of Witness 26, 17 Feb. 2009 (hereinafter "Witness 26 Declaration"). EM, Vol. IV, Annex 210.

[569] Witness 31 Declaration, *op. cit*. EM, Vol. IV, Annex 215.

[570] Whitten et al. Report, *op. cit.,* p. 22. ER, Vol. II, Annex 5.

[571] *See* Ibid.

[572] Declaration of Witness 27, 17 Feb. 2009 (hereinafter "Witness 27 Declaration"). EM, Vol. IV, Annex 211; Declaration of Witness 29, 16 Jan. 2009 (hereinafter "Witness 29 Declaration"). EM, Vol. IV, Annex 213; Witness 31 Declaration, *op. cit*. EM, Vol. IV, Annex 215.

[573] *See* Witness 29 Declaration, *op. cit*. EM, Vol. IV, Annex 213; Witness 31 Declaration, *op. cit*. EM, Vol. IV, Annex 215.

sprayings and their ancestral lands. Cofán Witness 26 and her family used to live by the border but "moved to live in the interior of Bermejo River, thinking that this way we were going to be safe, but we were still affected"[574]. She continues, "this displacement has affected our traditions, [as] it is very important for the Cofán people to keep their roots"[575].

C. ESMERALDAS 2000

3.84 The evidence from Mataje, a village located in the westernmost part of the Ecuadorian province of Esmeraldas, demonstrates that the aerial sprayings began to exert their effects on the village also in late 2000[576]. The village was originally situated along the banks of the Mataje River bordering Putumayo, Colombia, but following repeated aerial sprayings in the border area has since been re-established farther inland[577].

3.85 The witnesses describe exactly where they were and what they saw when the spray planes, previously unfamiliar to them, arrived in 2000. Witness 34 relates that she:

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[574] Witness 26 Declaration, *op. cit*. EM, Vol. IV, Annex 210.

[575] *Ibid.*

[576] *See infra* Figure 3.4.

[577] *See* Declaration of Witness 37, 19 Feb. 2009 (hereinafter "Witness 37 Declaration"). EM, Vol. IV, Annex 220.

> "was in Mataje when the first spraying occurred in the year 2000 . . . When the first spraying occurred, I was working in the field, clearing the land with a machete and removing the weeds in order to plant. I saw several planes above. . . . They came and went several times. They made a noise and dropped a liquid. In the air it looked like white dust. With the wind, it moved through the air and descended to the ground. When it fell on the plants, I noticed that it looked like oil on top of them"[578].

3.86 Similarly, Witness 36 describes what she saw from her home on the banks of the Mataje River at that time:

> "The first time that I saw the sprayings was in the year 2000. I was clearing the land in my farm, accompanied by my younger son. I saw the planes and helicopters flying over the river. From the planes, a white rain was coming out. That rain fell on top of me and also on top of my son; it looked like grease on the skin"[579].

The statements from Mataje residents – Witnesses 30, 32, 33, 37, 38 and 39 – further describe the witnesses' experience of the first aerial spraying in 2000 and its effects[580]. These descriptions belie Colombia's criticism of the "vague" dates described in the statements of the Mataje residents.

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[578] Declaration of Witness 34, 19 Feb. 2009 (hereinafter "Witness 34 Declaration"). EM, Vol. IV, Annex. 218.

[579] Declaration of Witness 36, 19 Feb. 2009 (hereinafter "Witness 36 Declaration"). EM, Vol. IV, Annex 219

[580] Mataje residents: Declaration of Witness 30, 19 Feb. 2009 (hereinafter "Witness 30 Declaration"). EM, Vol. IV, Annex 214; Declaration of Witness 32, 19 Feb. 2009 (hereinafter "Witness 32 Declaration"). EM, Vol. IV, Annex 216; Declaration of Witness 33, 19 Feb. 2009 (hereinafter "Witness 33 Declaration"). EM, Vol. IV, Annex 217; Witness 37 Declaration, *op. cit.* EM, Vol. IV, Annex 220; Declaration of Witness 38, 19 Feb. 2009 (hereinafter "Witness 38 Declaration"). EM, Vol. IV, Annex 221; Declaration of Witness 39, 19 Feb. 2009 (hereinafter "Witness 39 Declaration"). EM, Vol. IV, Annex 222.

3.87 Colombia's own flight data confirm what the witnesses describe. The data, depicted in **Figure 3.4**, show that Colombia began its sprayings along the border with Esmeraldas in August 2000, and continued through September 2000.

3.88 Contemporaneous news articles further corroborate what is evident from the witness statements and flight data, confirming the timing of the initial sprayings and the resultant harms. A newspaper report from *La Hora* on 18 September 2000 states that the Mataje residents were suffering from health impacts following sprayings during that time[581]. Due to the extent of harm reported, the article explains that the local district of San Lorenzo formed a commission to travel to Mataje to further investigate. A member of the commission confirmed that "at this moment" Mataje residents were suffering from "skin infections, ongoing diarrhea, and eye irritations . . . seemingly as a consequence of [Colombia's] fumigations"[582]. The article provides Mataje residents' reports of frequent flights by Colombian spray planes and helicopters[583].

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[581] "In Mataje the Implementation of Plan Colombia Causes First Ravages", LA HORA (Quito, 18 Sept. 2000). ER, Vol. IV, Annex 57.

[582] *Ibid.*.

[583] *Ibid.*

Spray Events Within 10 Kilometres of Ecuador's Esmeraldas Province (August - September 2000)

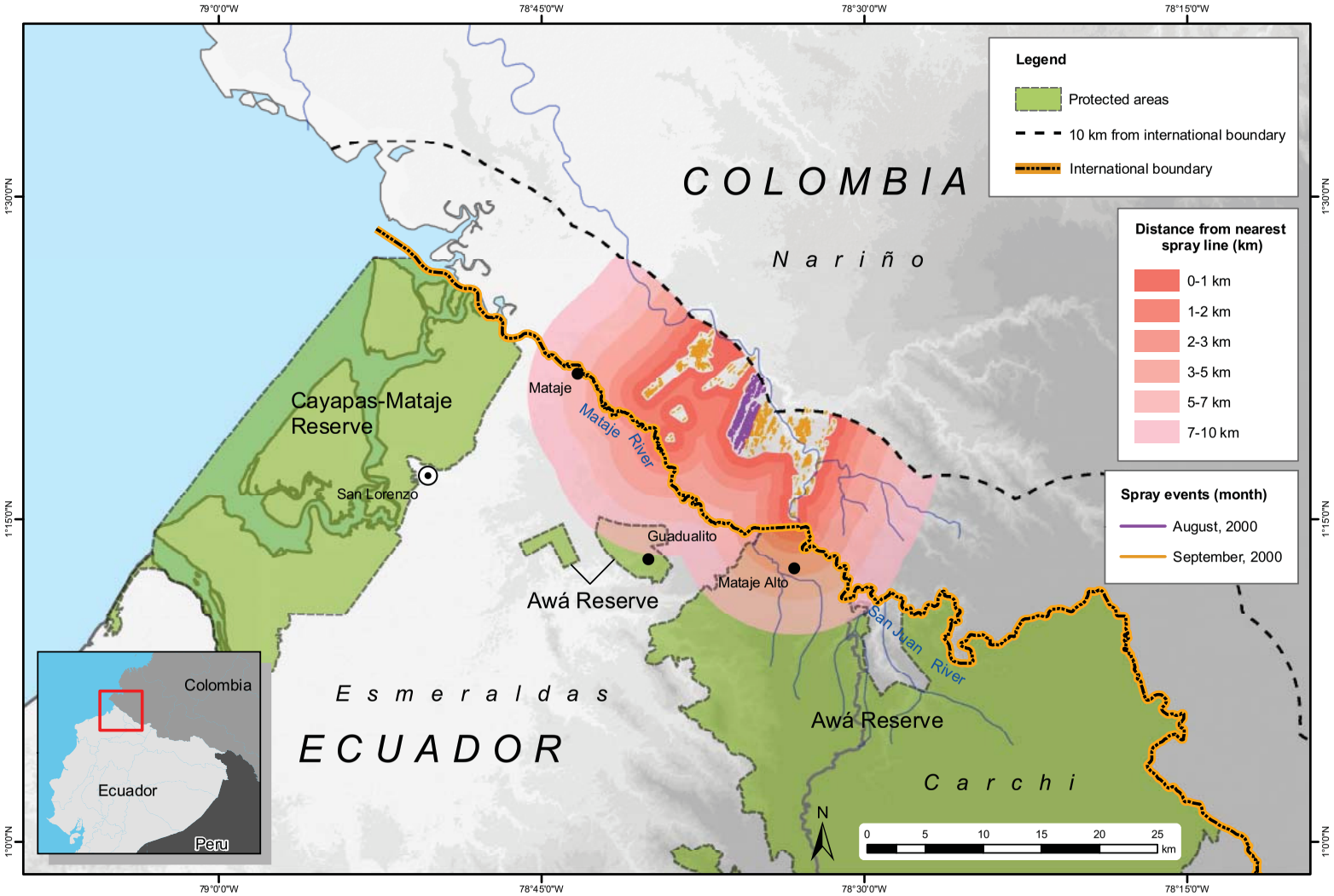

Figure 3.4

3.89 The harms reported in the contemporaneous news article – "skin infections, ongoing diarrhea, and eye irritations"[584] – are the same harms described by the witness statements (and the same ones associated with exposure to glyphosate-based herbicides and adjuvants like POEA)[585]. Witness 36, for example, explains how after feeling the spray on her skin and drinking water from a bucket exposed to the white mist, she became sick "with a stomach ache, vomiting, diarrhea and itchiness on [her] body"[586]. Likewise, Witness 34 describes her immediate reactions upon being exposed to the spray in 2000, "[t]he liquid also fell on me, on my head, arms, and all over my body. Immediately, I felt my skin itch intensely. . . . Above all, my face became very swollen"[587]. She describes how her face was so "disfigured" that she was ashamed to speak to the visiting newspaper reporters[588].

3.90 Despite the *Counter-Memorial*'s rote denials, these harms are the classic, and acknowledged, health effects of exposure to the known elements of Colombia's spray mixture. As described in Ecuador's *Memorial*, Colombian and U.S. government studies expressly acknowledge that the spray mixture, and its

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[584] *Ibid.*

[585] *See supra* Chap. 3, para. 3.25; EM pp. 132-152.

[586] Witness 36 Declaration, *op. cit*. EM, Vol. IV, Annex 219.

[587] Witness 34 Declaration, *op. cit*. EM, Vol. IV, Annex 218.

[588] *Ibid.*

recognized chemical components, cause eye irritation[589]. In fact, the U.S. Environmental and Protection Agency confirms that the product being used at this time could cause "irreversible eye damage"[590]. As previously discussed, the product labels for the known chemical elements used in the spray mixture warn that improper exposure to the products cause "skin irritation", "gastrointestinal tract irritation", and "eye irritation"[591] – all the symptoms felt by the Mataje residents.

3.91 Colombia cites a lack of contemporaneous medical evidence to corroborate these testimonies, and points to statements in a 2001 observation mission report to the effect that, beyond the impacts seen and reported, there were no *studies* showing that the sprayings and the immediate appearance of glyphosate-related illnesses were connected. As noted earlier, medical records of the kind typically found in European health clinics are not maintained in Mataje where there was but one nurse and no electricity in the makeshift "health centre" that was established on 15 September 2000, a few days before it was overwhelmed by an unprecedented wave of sick patients with similar but unfamiliar symptoms[592]. The observation mission reports and witness statements

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[589] EM, Chap. 5, para. 5.37.

[590] *See supra* Chap. 2, para. 2.21

[591] *See supra* Chap. 2, paras. 2.19-2.20, 2.24, 2.27, 2.29, 2.32-2.34, 2.37-2.41.

[592] "44 Affected by the Fumigations", EL COMERCIO (Quito, 22 Oct. 2000). ER, Vol. IV, Annex 58.

provided in the *Memorial* explain that after the spray drift had been felt by the local residents, the children became ill first, soon after followed by the adults – ultimately totalling nearly 40 people[593]. As described by Witness 36, when she went to see the nurse "there were so many people sick with vomiting and headaches that there was nowhere to sit"[594]. With or without contemporaneous medical records or scientific studies, the uncontradicted statements of numerous witnesses in regard to what they themselves experienced and observed constitutes reliable evidence of the health impacts of Colombia's aerial sprayings near Mataje.

3.92 Although she made no written records, the nurse at Mataje had no difficulty connecting the illnesses she treated in September 2000 to the recently conducted aerial spraying adjacent to the village[595]. In a contemporaneous news

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[593] *Ibid.* ER, Vol. IV, Annex 58; EM, Chap. 6, paras. 6.38-6.43; Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 17 (19-22 July 2001). EM, Vol. IV, Annex 162; Witness 39 Declaration, *op. cit*. EM, Vol. IV, Annex 222; Witness 36 Declaration, *op. cit*. EM, Vol. IV, Annex 219; Witness 32 Declaration, *op. cit*. EM, Vol. IV, Annex 216. *See also* Witness 30 Declaration, *op. cit*. EM, Vol. IV, Annex 214; Witness 33 Declaration, *op. cit*. EM, Vol. IV, Annex 217; Witness 34 Declaration, *op. cit*. EM, Vol. IV, Annex 218; Witness 37 Declaration, *op. cit*. EM, Vol. IV, Annex 220; Witness 38 Declaration, *op. cit*. EM, Vol. IV, Annex 221.

[594] Witness 36 Declaration, *op. cit*. EM, Vol. IV, Annex 219.

[595] Hospital staff in southern Colombia similarly had no trouble seeing the causal link between the sprayings and illnesses seen there: "These symptoms also coincide with observations made by the medical staff at the hospitals in southern Colombia, who said that from the moment that the sprayings began, they observed a marked increase of these illnesses". Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 20 (19-22 July 2001). EM, Vol. IV, Annex 162.

article from 22 October 2000, she is reported as confirming that since the September sprayings had ended, the symptoms had not reappeared[596]. That is, until Colombia resumed spraying along the border with Mataje the following year, and in each year after that.

3.93 Colombia cites a report including statements by area doctors – none of whom treated the victims of aerial spraying in Mataje – suggesting that their symptoms may have resulted from exposure to glyphosate-based herbicides used at palm plantations in Ecuador[597]. But the *Counter-Memorial* fails to point out that, on the same page of the cited report, a plantation worker explains that the palm plantation spraying is "done with a [hand] pump, and not with planes; and, that the stream into which the water for these crops drain is downstream, below Mataje"[598]. The UN Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health further refutes Colombia's "misleading" argument: "The Special Rapporteur notes that the use of glyphosate in Ecuador (direct and manual) is different from the method used on the border by Colombia (aerial spraying). Furthermore, as

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[596] "44 Affected by the Fumigations", EL COMERCIO (Quito, 22 Oct. 2000). ER, Vol. IV, Annex 58.

[597] CCM, Chap. 7, paras. 7.145-7.146 (citing Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia* (19-22 July 2001). EM, Vol. IV, Annex 162).

[598] Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 18 (19-22 July 2001). EM, Vol. IV, Annex 162.

the composition and concentration of the spraying appear to differ between Ecuador and Colombia, the suggested equivalence between Ecuadorian and Colombian practice is misleading"[599].

3.94 The harms caused in Mataje extended beyond human health. The Mataje residents also witnessed a wave of fish deaths in the border river immediately following the sprayings. As confirmed by Witness 34, "after the spraying, there were a lot of dead fish and shrimp. Usually, the fish and shrimp are below the water level. But, after the sprayings, they were floating on the surface of the river and going downstream with the current. I observed this immediately after the sprayings"[600]. Mataje Witnesses 33, 37, 38, and 39 similarly recount their sighting of the fish-kill[601]. The witness statements are corroborated by contemporaneous news articles reporting that on 22 September 2000, in addition to the ill effects on humans following the spraying, "fish and other species" had also died in the border Mataje River[602].

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[599] *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, U.N. Doc. A/HRC/7/11/Add.3, para. 18 (4 Mar. 2007). EM, Vol. II, Annex 31.

[600] Witness 34 Declaration, *op. cit*. EM, Vol. IV, Annex 218.

[601] Witness 33 Declaration, *op. cit.* EM, Vol. IV, Annex 217; Witness 37 Declaration, *op. cit.* EM, Vol. IV, Annex 220; Witness 38 Declaration, *op. cit.* EM, Vol. IV, Annex 221; Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222.

[602] "44 Affected by the Fumigations", EL COMERCIO (Quito, 22 Oct. 2000). ER, Vol. IV, Annex 58.

3.95 Colombia tries to ignore the confluence of evidence, including its own, to claim that the fish deaths are "unsubstantiated"[603]. The *Counter-Memorial* provides two principal reasons for this unsupported assertion – both of which fail. First, Colombia resorts to its usual tactic of referring only to the base chemical glyphosate, and not the actual spray mixture, arguing that "glyphosate" has exhibited "little chronic toxicity to fish"[604]. This is not the understanding of the manufacturers of glyphosate-based herbicides, however. The label for GLY-41, one of the herbicide formulations that Colombia admits to using, for example, provides this warning in regard to the product's toxicity to fish[605]:

No contamine
fuentes de agua

Figure 3.5 Warning Symbols From GLY-41 Label – Fish and Other Aquatic Organisms

3.96 Moreover, Colombia's own experts recognize the difference in toxicity between glyphosate itself and the actual spray mixture used in the aerial spraying programme. The Dobson Report, which is annexed to the *Counter-Memorial*, for example, admits that "fish exposed to the spray formulation as used in Colombia

[603] CCM, Chap. 7, para. 7.82.

[604] *Ibid.* (internal quotations omitted).

[605] *See supra* Chap. 2, para. 2.41.

(including the Cosmo-flux adjuvant) show greater toxicity than to the formulation alone"[606]. The Solomon study further warns that "moderate risks could occur in aquatic organisms in shallow surface waters that are over-sprayed during the eradication program"[607]. Accordingly, "[i]f shallow waters are routinely found close to fields, it is recommended that other formulates be tested for the purposes of selecting products that present a lower risk to aquatic organisms"[608]. There is no evidence that Colombia changed the formula in response to this study. Thus, it should come as no surprise that fish-kills similar to the one at Mataje were also produced by the aerial sprayings in Ecuador's Sucumbíos Province and in many Colombian villages exposed to the sprayings[609].

3.97 Colombia's second attempt at avoiding responsibility for fish-kills resulting from its aerial sprayings is based on its alleged observance of "no-spray buffer zones along watercourses"[610]. As with all of the studies Colombia relies on, its expert *presumes* Colombia's *strict compliance* with the buffer zone

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[606] CCM, Appendix, p. 25, para. 99.

[607] Solomon 2005, *op. cit*., p. 11. CCM, Vol. III, Annex 116. The report continues: "However, the frequency of occurrence and extent to which this happens are unknown as data on the proximity of surface waters to coca fields were not available."

[608] *Ibid.*, *op. cit*., p. 12.

[609] *See, e.g*., Association of American Jurists et al., *Report on Verification Mission: Impacts in Ecuador of Fumigations in Putumayo as Part of Plan Colombia*, p. 3 (Oct. 2002). EM, Vol. IV, Annex 165; Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 190; Witness 5 Declaration, *op. cit*. EM, Vol. IV, Annex 193; Declaration of Witness 8, 16 Jan. 2009 (hereinafter "Witness 8 Declaration"). EM, Vol. IV, Annex 196; Declaration of Witness 10, 16 Jan. 2009 (hereinafter "Witness 10 Declaration"). EM, Vol. IV, Annex 198; Witness 28 Declaration, *op. cit*. EM, Vol. IV, Annex 212.

[610] CCM, Chap. 7, para. 7.82.

restrictions and operational requirements in the Environmental Management Plan to reach the conclusion that the fish-kills could not have been caused by the spray. Significantly, he acknowledges that the spray mixture could cause fish-kills either "through the direct toxicity of the surfactants in the spray mix or from indirect effects due to oxygen depletion caused by biodegradation of dead plant material"[611]. However, based on Colombia's supposed strict adherence to operational requirements and buffer zones, he concludes that it would be "highly improbable" for the spray to have reached Ecuador and caused these effects[612]. As shown in Chapter 2, the presumptions on which the opinion of Colombia's expert are based are thoroughly negated by the flight data recorded by the spray planes which Ecuador obtained from the U.S. Department of State. The opinion remains interesting, however, for this reason: its acknowledgement that Colombia's spray mixture, if it reached the water bodies in or near Mataje where the dead fish were observed, could have been responsible for killing them. The flight data tell the rest of the story: spray drift into Mataje was inevitable given the pervasive violations of all of the operational requirements by the spray pilots, including deposition of huge volumes of spray near the river that runs immediately next to Mataje.

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[611] CCM, Appendix, p. 26, para. 100.

[612] *Ibid.*

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3.98 After the impacts felt for the first time in September 2000, the residents of Mataje were repeatedly revisited by Colombia's spray planes depositing the spray mixture along the border river, and by the matrix of ills that would immediately follow. The greater Mataje area, including the Cayapas-Mataje Ecological Reserve to the west and the Awá Indigenous Reserve to the east, was particularly hard hit in 2004 and 2005, as shown by the flight data illustrated on **Figure 3.6**. By the time aerial spraying in this area finally ended in 2007[613], Colombia had sprayed along the southernmost 10 kilometres of Nariño Province at least 28,638 times[614].

3.99 The last of these spraying campaigns, in early 2007, was particularly intense and especially close to the Esmeraldas border – as can be appreciated from the flight data in **Figure 3.7**. This spraying campaign was especially troubling because Colombia had earlier promised that it would notify Ecuador in

[613] Contrary to Colombia's claims, the evidence shows that its fumigations along the Ecuadorian border ended on or after 9 February 2007, not January 2007, as repeatedly presented in Colombia's *Counter-Memorial*, and not in January 2006, as recently claimed by the Colombian government in its press release of 11 November 2010. Colombia chose not to provide any evidence to support its assertions in the *Counter-Memorial* regarding the dates on which it sprayed or suspended spraying. What the flight data show, and what the witness statements and contemporaneous news reports further corroborate down to the day, is that Colombia continued to spray in this area through at least 9 February 2007. *See* "More Refugees As A Result of Fumigations Along the Border", EL UNIVERSO (Guayaquil, 8 Feb. 2007). ER, Vol. IV, Annex 81; "Colombia Sprayed Within 1 km of the Border", EL UNIVERSO (Guayaquil, 10 Feb. 2007). Annex 83.

[614] Hansman & Mena Report, Appendix 3, p. 28. ER, Vol. II, Annex 1.

Spray Events Within 10 Kilometres of Ecuador's Esmeraldas Province (March 2004 - December 2005)

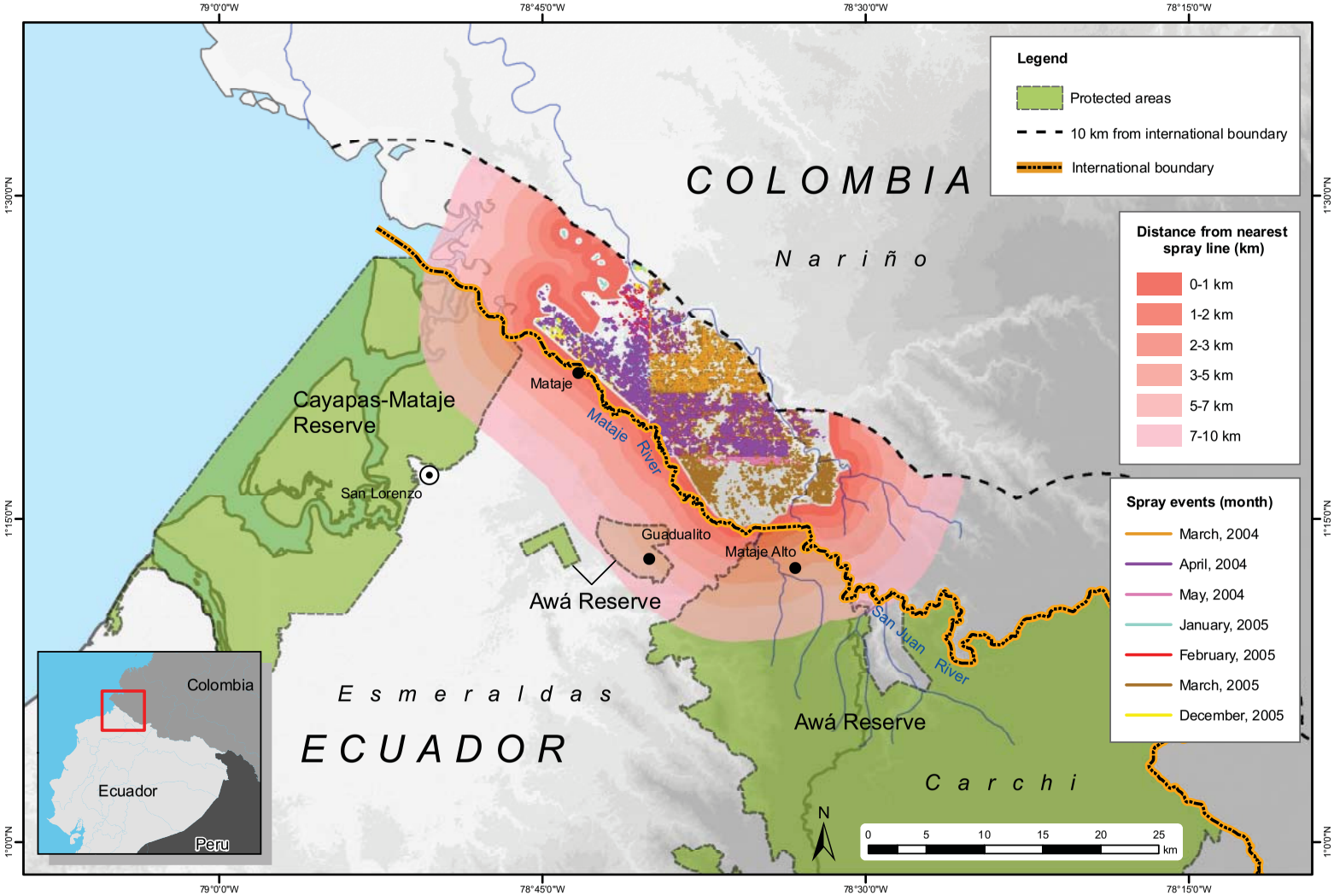

Figure 3.6

Spray Events Within 10 Kilometres of Ecuador's Esmeraldas Province (February 2007)

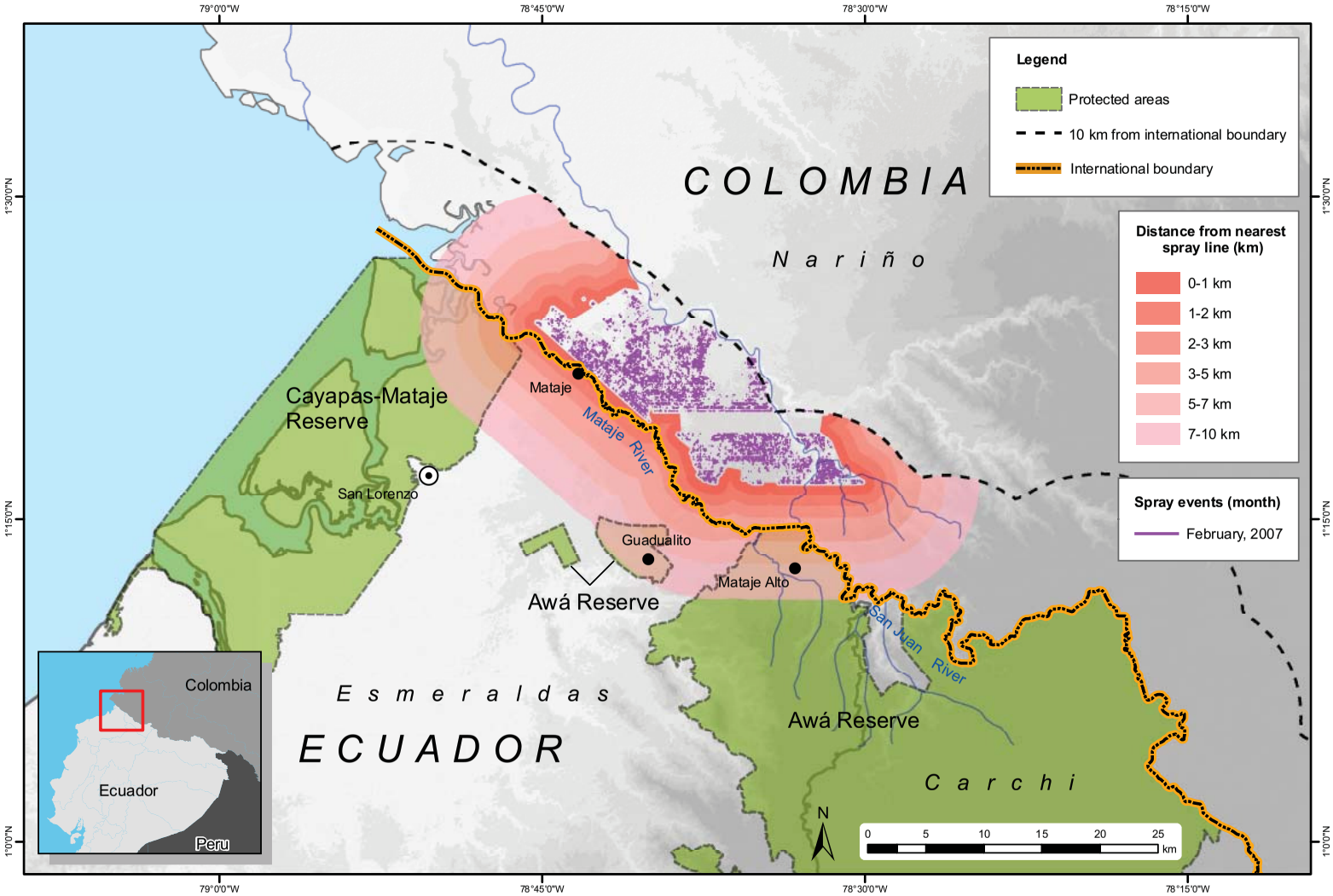

Figure 3.7

case of future sprayings, thereby allowing both States to put in place investigators to determine whether the spray entered or harmed Ecuador[615]. Regrettably, no such advance notice was provided by Colombia.

3.100 Yet, on 8 February 2007, as reported in contemporaneous news articles in *El Universo*, residents and Ecuadorian military officers watched five Colombian spray planes accompanied by helicopters spraying within 1 kilometre of the Mataje River[616]. On 9 February 2007, after Colombia's announcement that spraying had been suspended, Ecuadorian residents watched again as four spray planes and helicopters returned at 10:00 a.m., and continued to deposit the aerial spray mixture, this time less than 1 kilometre from the border. The *El Universo* article reports that local residents had witnessed this spraying campaign since the previous week[617].

3.101 As happened many times before, immediately following exposure to the spraying, area residents fell ill with the now-familiar symptoms. By 10 February

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[615] "Colombia Announces Ceasing of Fumigations to Ease Relations with Quito", EL UNIVERSAL.COM (Caracas, 9 Feb. 2007). ER, Vol. IV, Annex 82.

[616] "Colombia Sprayed Within 1 km of the Border", EL UNIVERSO (Guayaquil, 10 Feb. 2007). ER, Vol. IV, Annex 83.

[617] *Ibid.*

2007, local children were sick with skin rashes covering their bodies, and eye irritation[618].

3.102 The children, being the most vulnerable, were often the most hard-struck by the spray mixture's effects. Mataje Witness 33 describes how "many in the community were affected. A lot of the children had diarrhea and vomiting, including the children in my family. The adults were also sick but the children were affected more"[619].

3.103 The harms to human health were not the only injuries caused by the spraying campaign. As in years past, in February 2007 Colombia's aerial sprayings posed serious risks to the environment on Ecuador's side of the border. Mataje is located near the Cayapas-Mataje Ecological Reserve, which was established to protect the area's mangrove forests[620]. As described in Professor Balslev's expert report, the mangroves on Ecuador's western coast "are the largest in Ecuador and the only ones where the mangrove tree *Pelliceria rhizophorae* can be found"[621]. These mangroves are particularly important for the variety of ecosystem services they provide:

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[618] *Ibid.*

[619] Witness 33 Declaration, *op. cit*. EM, Vol. IV, Annex 217.

[620] *See* Henrik Balslev, Ph.D., *The Vulnerability of the Ecuador-Colombia Border Region to Ecological Harm*, p. 28 (Jan. 2011) (hereinafter "Balslev Report"). EM, Vol. II, Annex 4.

[621] *Ibid.,* p. 22.

> "Their position in the tidal zone makes them important for many species of marine life. The tidal zone placement produces a salinity gradient and each zone has its own fish and invertebrate fauna, so in a very limited space fishermen can find a wide range of different species. Mangrove ecosystems are also important as hatchment areas for larvae of a variety of marine organisms, including shrimp and lobster. Many of these species, including oysters, crab, lobster, shrimp and many types of fish are important to local human diets. Mangroves also provide an important habitat for a variety of bird species, many of which are residents of the Cayapas–Mataje mangrove protected area along the Colombian border"[622].

3.104 The local Esmeraldas fisherman are thus heavily reliant on the health of this ecosystem. It was they who, soon after the February 2007 sprayings, raised claims against Colombia for the harms caused to the mangroves and their sole source of income. According to a contemporaneous press report, the President of the Esmeraldas Fishermen's Union expressed this concern about the effects of the aerial sprayings on the mangroves: "The only natural laboratory we have in Esmeraldas, which is the northern mangroves, and which is key to breeding and maintaining the ecosystem, is being seriously affected and consequently fishing will decrease in a very short time"[623]. He explained that the timing of the sprayings was particularly troubling because they occurred during red snapper

[622] *Ibid.*

[623] "Fishermen in Esmeraldas Fear Spraying with Glyphosate Affects Mangroves", EL UNIVERSO (Guayaquil, 20 Feb. 2007). ER, Vol. IV, Annex 84.

fishing season, and "the poison just alienates all coastal species and kills the larvae, as it is in this area that females lay their eggs"[624].

3.105 The largely Afro-Ecuadorian communities in Mataje and other parts of Esmeraldas Province are not the only ones impacted adversely by Colombia's aerial sprayings along and near the border. Also affected are the Awá indigenous people. The UN Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health observed that the sprayings affected different groups: "the aerial spraying of glyphosate along the northern border had to be seen in the context of the conditions of the people – refugees, indigenous peoples, Afro-Ecuadorians . . . living on the northern zone"[625].

1. The Awá of Esmeraldas

3.106 The Awá are an indigenous group numbering only about 3,000 individuals in Ecuador[626]. As described in the report written by experts on the Awá community of northern Ecuador, "[t]he Awá live mostly in very remote areas in moist pristine forests on the western slopes of the Andes in the provinces of

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[624] *Ibid.*

[625] *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, U.N.Doc. A/HRC/7/11/Add.3, para. 21 (4 Mar. 2007). EM, Vol. II, Annex 31.

[626] Whitten et al. Report, *op. cit.,* p. 45. ER, Vol. II, Annex 5.

Carchi, Imbabura and Esmeraldas"[627]. Most are concentrated in the Awá Indigenous Forest Reserve located east of Mataje along the Esmeraldas/Carchi border adjoining Colombia's Nariño province, shown in **Figures 2.14**, **3.6** and **3.7** above. Anthropologists familiar with this group explain that "[t]his is not a population of 'several generations,' but of millennia"[628]. "Contemporary Awá use a system of horticulture (agriculture) practices that includes maize cultivation that dates to at least four thousand years ago"[629]. Their mode of living and relationship to the environment around them is thus deeply ingrained. It is not just that they are intimately connected to the land; it is that they are intimately connected with *this* land.

3.107 The environment they inhabit, and where they have lived for millennia, is one of the most biodiverse places in the world. It is a rare "biodiversity hotspot" because of the exceptional concentrations of unique species that exist nowhere else on earth[630]. In fact: "The best preserved parts of this forest are those along the Ecuador–Colombia border"[631]. This area is not only notable for the large

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[627] *Ibid.*

[628] *Ibid.*, p. 47.

[629] *Ibid.*

[630] Balslev Report, pp. 19-22. ER, Vol. II, Annex 4. The endemism is particularly high in plant species, where 25 percent or 2,750 plant species found in the hotspot occur nowhere else in the world. There are close to 900 species of birds in the hotspot, 110 of which are endemic. Amphibian diversity is also very high, with 200 different species including 30 endemics, such as the famous poison dart frog.

[631] Balslev Report, *op. cit.,* p. 19. ER, Vol. II, Annex 4.

number of endemic species found there but also for the number of them that are "highly threatened"[632].

3.108 Given the depth of the connection of the Awá to this area, any significant change to its unique environment has wide-spread consequences for them. Such has been the result of Colombia's aerial sprayings adjacent to this habitat. As expressed by Witness 40, an Awá from the Mataje Alto village situated in the Reserve: "The sprayings came and broke our connections with our earth and our way of living"[633].

3.109 As indicated in Chapter 2, the flight data obtained by Ecuador from the U.S. State Department show that Colombia sprayed within 10 kilometres of the Awá Reserve more than **10,900 times** between 2000 and 2008, and within a mere 2 kilometres at least **57 times** during this period[634]. Colombia began spraying in the area of Nariño Province bordering the Awá Reserve in late 2000[635]. Thereafter, the sprayings increased in intensity and also in proximity to the Awá Reserve, reaching their peak in 2005. As shown in **Figure 3.6** above, in that year Colombia blanketed the border area with its chemical spray mixture. The data show a series of spray lines skimming the Mataje River marking the border

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[632] *Ibid.*

[633] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

[634] Hansman & Mena Report, *op. cit.,* Appendix 3, p. 14. ER, Vol. II, Annex 1.

[635] *See supra* Figure 3.4.

between Colombia and the Awá Reserve, and coming particularly close to the village of Mataje Alto, the home of Witness 40, quoted above.

3.110 The witness statements, NGO reports, flight data and report of the UN Special Rapporteur on Indigenous Peoples all corroborate the harm caused to indigenous people, plants and animals exposed to the spray in the north-western area of the protected reserve. As stated in an observation mission report from November 2005, the Awá complained that as a result of the spraying "the animals have decreased, the leaves have dried up. The produce turns hard, the maize dries up leaving only the cob. There are no fish anymore"[636].

3.111 Within days of the spraying, Awá children arrived at the health post "sick with diarrhea, vomiting, high fever, and stomach ache"[637]. Soon after, adults followed with the same set of symptoms, as well as skin rashes[638]. These were unlike any other symptoms previously experienced by the local Awá – they occurred for the first time following the first spraying in the area[639]. Since it has

[636] Interamerican Association for Environmental Defense et al., *Ecolex and AIDA Environmental Report on the Impacts of the Fumigations under Plan Colombia*, p. 5 (Nov. 2005). EM, Vol. IV, Annex 170.

[637] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

[638] *Ibid.*

[639] *Ibid.*

nothing better to say, Colombia again complains about lack of contemporaneous medical records[640].

3.112 Ecuador agrees it would be nice if such records existed – and much nicer still if there were physicians or nurses accessible to the Awá who might have prepared them. But the reality is that from Mataje Alto it takes five hours on foot and another 1.5 hours by car to reach the town with the nearest hospital[641]. Thus, when ill Awá usually self-medicate using medicinal-plants or go to the traditional healer, the shaman[642]. The shaman does not keep a doctor's notebook while performing his healing rituals. If the patient remains uncured, on the best of days the health promoter can provide the scant treatment that is available[643]. At other times, as recounted by Witness 40, he is over-run and over-whelmed with patients, unable to attend to all their needs, let alone keep a medical log he does not have[644].

3.113 The death of plants traditionally gathered by the Awá as a principal food source also followed closely upon Colombia's aerial sprayings. Witness 40

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[640] CCM, Chap. 7, paras. 7.141-7.142.

[641] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223. *See also* Whitten et al. Report, pp. 45, 49. ER, Vol. II, Annex 5.

[642] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223; Whitten et al. Report, pp. 48-49. ER, Vol. II, Annex 5.

[643] *See, e.g.*, Witness 41 Declaration. EM, Vol. IV, Annex 224.

[644] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

explains that "from the first time they sprayed, our food supply was affected"[645]. The statement by Awá Witness 41 describes in more detail how "[a]fter the spraying, all the crops began to dry up. They turned yellow two or three days after the sprayings. The leaves of the sugarcane became withered and they fell off. The yucca leaves also withered, and the maize completely dried within a week after the spraying"[646]. As in Mataje and elsewhere, immediately following the spraying, the fish in the river were found to be affected. Witness 40 describes the "bumps" on the fish's skin, like "blisters", their unusually pale eyes and the skin's strange change to a "reddish" color[647]. The witness statements and the report of the UN Special Rapporteur on the Rights of Indigenous Peoples also document the death and disappearance of wild animals normally found in the Reserve[648].

3.114 Tragically, despite their ancient cultural connection to the land of their ancestors, the Awá have been forced to choose between remaining in their homes and enduring the consequences of future sprayings by Colombia, or abandoning their traditional lands for greater safety. The evidence shows that the sprayings

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[645] *Ibid.*

[646] Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224.

[647] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

[648] *Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, Rodolfo Stavenhagen: Mission to Ecuador (25 April-4 May 2006)*, U.N. Doc. A/HRC/4/32/Add.2, para. 30 (28 Dec. 2006). EM, Vol. II, Annex 30; Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224.

have caused some Awá – like the Cofán and the Kichwa, as described previously – to choose the latter, leaving a culture and millennia of history behind. The UN Special Rapporteur on the Rights of Indigenous Peoples reports that following Colombia's sprayings the entire Sumac Pamba Awá community abandoned their ancestral village[649]. As described by Witness 40:

> "as a result of the damages to health, nature and our sources of food and spirituality, some people had to move to other Awá communities within the reserve, which were farther from the border and not affected by the sprayings. They made this decision in order to avoid the health problems caused by the fumigations and the death of their crops, because they no longer had the means to survive"[650].

Section II. The Evidentiary Value of Witness Statements

3.115 A main feature of the *Counter-Memorial*'s effort to undermine Ecuador's witness statements is its argument that, under the Court's jurisprudence, they should be disregarded. In particular, after citing the Court's Judgment in *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras)*, Colombia asserts: "Unless independently corroborated, [witness statements] are entitled to no weight; notably insofar as they purport to express any opinion as to causation"[651]. This

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[649] *Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, Rodolfo Stavenhagen: Mission to Ecuador (25 April-4 May 2006)*, U.N. Doc. A/HRC/4/32/Add.2, para. 30 (28 Dec. 2006). EM, Vol. II, Annex 30.

[650] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

[651] CCM, Chap. 7, para. 7.127.

aspect of the *Counter-Memorial*'s argument both defeats itself and is wrong as a matter of law.

3.116 Colombia's argument defeats itself because, as demonstrated in Section I above, Ecuador's eyewitness accounts are, in fact, "independently corroborated", not least by the spray flight data that has recently come into Ecuador's possession, as well as by contemporaneous observation mission reports, newspaper articles, the reports of various UN Special Rapporteurs, contemporaneous medical inquests, the scientific literature on the known effects of glyphosate-based herbicides, health warnings on product labels, and official reports of governmental agencies in third States, *inter alia*.

3.117 And Colombia is wrong as a matter of law because the Court has never said that witness statements should be accorded "no weight"[652]. In making this claim Colombia has disregarded the historic practice of the Court. Since as early as the *Corfu Channel* case, the Court has admitted sworn statements as evidence[653]. Indeed, the Court noted that it "gave much attention to this

[652] *Ibid.*

[653] *Corfu Channel (United Kingdom v. Albania)*, *Judgment, I.C.J. Reports 1949*, p. 19.

evidence…" in the *Corfu Channel* decision[654]. Since then, witness statements have regularly been accepted as sources of factual evidence[655].

3.118 Consistent with this approach, what the Court actually said in *Nicaragua v. Honduras* was that "the Court will not find it inappropriate as such to receive affidavits produced for purposes of litigation if they attest to personal knowledge of facts by a particular individual"[656]. The Court explained that such affidavits may be treated with a degree of "caution", depending on a number of specific factors, including: (i) the affidavit attests to facts or only offers an opinion; (ii) the witness' "capacity to attest to certain facts"; (iii) "the utility of what is said"; (iv) when the affidavits were made; and (v) whether the affiant has an interest in the outcome of the proceedings[657]. Balancing these factors in the circumstances of this case dictates that substantial weight be given to the witness statements attached to Ecuador's *Memorial*.

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[654] *Ibid.*, p. 16. (referring to written and verbal witness statements presented by the United Kingdom).

[655] *See e.g., Military and Paramilitary Activities (Nicaragua v. United States)*, *Judgment, I.C.J. Reports 1986*, p. 42, para. 72; *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, I.C.J. Reports 2005*, p. 219, para. 129; *Guyana/Suriname*, Arbitral Award, pp. 141-144, paras. 432-439 (2007).

[656] *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras), Judgment, I.C.J. Reports 2007*, p. 731, para. 244. *See also Military and Paramilitary Activities (Nicaragua v. United States)*, *Judgment, I.C.J. Reports 1986*, p. 42, para. 68.

[657] *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras), Judgment, I.C.J. Reports 2007*, p. 731, para. 244.

3.119 Ecuador offers the statements for the truth of the facts stated, not any incidental opinions they might contain. To a person, the witnesses' statements are devoted to recounting historical facts within their personal knowledge and experience; something they plainly have the capacity to do. In fact, there are literally no other people in the world who are in a better position to speak to the matters in dispute in this case; they are the ones who directly observed and experienced the impacts of the spray that drifted across the border into Ecuador.

3.120 In this respect, the context of this case should not be forgotten. Colombia was conducting massive aerial spraying operations in one of the more remote corners of the planet, sparsely inhabited only by isolated communities of impoverished peasants and indigenous peoples largely cut off from centres of communication and commerce. But for their complaints calling attention to the harms inflicted on them, the truth of what happened might never have come out. Certainly Colombia – which still hides the full contents and formula of the spray mixture, and still keeps confidential the dates and precise location of its spraying events – would not have been forthcoming.

3.121 The testimonies are therefore highly useful. Most offer detailed accounts of what transpired when the sprayings began, and include very specific statements as to where they were, what they were doing and the consequences that followed. They are not summary assertions of ultimate conclusions.

3.122 Nonetheless, Ecuador does agree with Colombia in one respect. If, instead of offering 37 witness statements (plus 10 more from eyewitnesses in Colombia), Ecuador had offered only one, or even just a handful, the weight to be accorded them would have to be assessed differently. They then might plausibly be treated as a few isolated allegations notwithstanding the specificity with which each is made. But that is not the case; it is not a question of each statement standing alone. Rather, they stand together both with each other and with all the other elements of proof that Ecuador has presented (now including the spray flight data obtained from the United States) to form a consistent, coherent and mutually reinforcing whole that is entitled to substantial weight.

3.123 In Ecuador's view, it is this consistency that makes the statements so remarkable. They describe phenomena that are similar in all material respects. Their descriptions of the sprayings themselves, for example, are remarkably consistent though, of course, never precisely the same. Witness 37 from Mataje near the Pacific Coast, describes seeing the spray planes for the first time as follows: "The first time was in the year two thousand. I was working on my farm, at the edge of the river. I saw several planes and some helicopters coming from the Colombian side, dropping a liquid. The liquid looked like smoke and it fell on the ground and on my body, it looked shiny"[658]. More than 250 kilometres away in Sucumbíos, Witness 2 from Salinas describes the spraying that he

[658] Witness 37 Declaration, *op. cit*. EM, Vol. IV, Annex 220.

observed thusly: "I could observe maybe four planes and some helicopters passing by the San Miguel River and, when turning around, they would fly over Ecuadorian territory. The planes were flying, dropping a white liquid that with the wind came quickly toward us"[659].

3.124 The witnesses were equally consistent in their portrayal of the spray mist itself. Invariably, it was described as appearing "white", "like smoke" or "a cloud"[660]. Many specifically reported seeing it drift across the border and watching it land in Ecuadorian territory, including directly on them. It was uniformly described as "foul-smelling", and looking "greasy" or "like a light oil"[661]. Some even gave minute descriptions of the spray droplets that can only have come from direct experience. As Witness 33 from Mataje described the

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[659] Declaration of Witness 2, 16 Jan. 2009 (hereinafter "Witness 2 Declaration"). EM, Vol. IV, Annex 190.

[660] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189; Witness 3 Declaration, *op. cit*. EM, Vol. IV, Annex 191; Witness 5 Declaration, *op. cit*. EM, Vol. IV, Annex 193; Witness 8 Declaration, *op. cit*. EM, Vol. IV, Annex 196; Witness 9 Declaration, *op. cit*. EM, Vol. IV, Annex 197; Witness 12 Declaration, *op. cit*. EM, Vol. IV, Annex 200; Witness 13 Declaration, *op. cit*. EM, Vol. IV, Annex 201; Declaration of Witness 14, 17 Jan. 2009 (hereinafter "Witness 14 Declaration"). EM, Vol. IV, Annex 202; Witness 17 Declaration, *op. cit*. EM, Vol. IV, Annex 203; Witness 20 Declaration, *op. cit*. EM, Vol. IV, Annex 206; Witness 22 Declaration, *op. cit*. EM, Vol. IV, Annex 208; Witness 23 Declaration, *op. cit*. EM, Vol. IV, Annex 209; Witness 26 Declaration, *op. cit*. EM, Vol. IV, Annex 210; Witness 27 Declaration, *op. cit*. EM, Vol. IV, Annex 211; Witness 28 Declaration, *op. cit*. EM, Vol. IV, Annex 212; Witness 29 Declaration, *op. cit*. EM, Vol. IV, Annex 213; Witness 31 Declaration, *op. cit*. EM, Vol. IV, Annex 215; Witness 32 Declaration, *op. cit*. EM, Vol. IV, Annex 216; Witness 33 Declaration, *op. cit*. EM, Vol. IV, Annex 217; Witness 34 Declaration, *op. cit*. EM, Vol. IV, Annex 218; Witness 36 Declaration, *op. cit*. EM, Vol. IV, Annex 219; Witness 38 Declaration, *op. cit*. EM, Vol. IV, Annex 221; Witness 39 Declaration, *op. cit*. EM, Vol. IV, Annex 222.

[661] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189; Witness 23 Declaration, *op. cit*. EM, Vol. IV, Annex 209; Witness 32 Declaration, *op. cit*. EM, Vol. IV, Annex 216; Witness 3 Declaration, *op. cit*. EM, Vol. IV, Annex 191.

spraying, "I saw them releasing something that looked like a cloud, but when it fell on the grass it was shiny, oily and it stayed on the plants"[662].

3.125 The witnesses' descriptions of what happened after the sprayings are also mutually corroborating. The description of the specific symptoms of skin irritation – the burning itch, the bumps, the pus upon scratching – are remarkably consistent despite the witnesses' distance from each other and relative isolation. Witness 31, a Cofán from a remote village in the Cofán-Bermejo Reserve stated, "[i]t was there when the smoke also fell on the clothes and that continued to affect our skin. That lasted for about two weeks, first we had small bumps and then a week later they burst. The bumps itched a lot"[663]. Across the country in Mataje, Witness 34 testified that "the liquid also fell on me, on my head, arms, and all over my body. Immediately, I felt my skin itch intensely. My whole body was itching. Above all, my face became very swollen . . . I also got bumps all over my skin. I had a rash that burned and my skin peeled quite a bit"[664]. The witness statements are also consistent with the known reactions to the chemicals in the spray mixture[665]. The flight path data further affirm that the villages in which these witnesses resided were the same villages exposed to Colombia's

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[662] Witness 33 Declaration, *op. cit*. EM, Vol. IV, Annex 217.

[663] Witness 31 Declaration, *op. cit*. EM, Vol. IV, Annex 215.

[664] Witness 34 Declaration, *op. cit*. EM, Vol. IV, Annex 218.

[665] *See supra* Chap. 3, para. 3.25; EM pp. 132-152.

spraying, and at the same time that the witnesses say they observed the spray planes in operation.

3.126 The witness testimonies are equally consistent in their descriptions of the effects the sprayings had on plants. They invariably described how each different variety of crops they had planted showed the same signs of damage following the sighting of the spray planes and the deposition of the spray mixture. The witnesses provide similar details of the plants becoming yellow, often starting with the leaves, until completely wilted[666]. Upon opening the crop's fruits, the insides were found to be rotten[667]. There were also reductions in crop yields[668].

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[666] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189; Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 190; Witness 5 Declaration, *op. cit*. EM, Vol. IV, Annex 193; Declaration of Witness 6, 16 Jan. 2009 (hereinafter "Witness 6 Declaration"). EM, Vol. IV, Annex 194; Declaration of Witness 7, 16 Jan. 2009. EM, Vol. IV, Annex 195; Witness 8 Declaration, *op. cit*. EM, Vol. IV, Annex 196; Witness 9 Declaration, *op. cit*. EM, Vol. IV, Annex 197; Witness 12 Declaration, *op. cit*. EM, Vol. IV, Annex 200; Witness 17 Declaration, *op. cit*. EM, Vol. IV, Annex 203; Witness 22 Declaration, *op. cit*. EM, Vol. IV, Annex 208; Witness 23 Declaration, *op. cit*. EM, Vol. IV, Annex 209; Witness 30 Declaration, *op. cit*. EM, Vol. IV, Annex 214; Witness 32 Declaration, *op. cit*. EM, Vol. IV, Annex 216; Witness 37 Declaration, *op. cit*. EM, Vol. IV, Annex 220.

[667] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189; Witness 4 Declaration, *op. cit*. EM, Vol. IV, Annex 192; Witness 8 Declaration, *op. cit*. EM, Vol. IV, Annex 196; Witness 13 Declaration, *op. cit*. EM, Vol. IV, Annex 201; Witness 36 Declaration. EM, Vol. IV, Annex 219.

[668] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189; Witness 4 Declaration, *op. cit*. EM, Vol. IV, Annex 192; Witness 6 Declaration, *op. cit*. EM, Vol. IV, Annex 194; Witness 8 Declaration, *op. cit*. EM, Vol. IV, Annex 196; Witness 12 Declaration, *op. cit*. EM, Vol. IV, Annex 200; Witness 17 Declaration, *op. cit*. EM, Vol. IV, Annex 203; Declaration of Witness 19, 17 Jan. 2009 (hereinafter "Witness 19 Declaration"). EM, Vol. IV, Annex 205.

3.127 In addition to the mutually corroborating details of the signs of damage shown by the plants, what is notable is that all plants were indiscriminately affected. As described by Witness 30 of Mataje, Esmeraldas:

> "After the sprayings, my crops were affected. Eight days after the sprayings, the leaves on the cacao tree started falling off, until not a single leaf was left; the tree dried up completely and it died. The same thing happened with the yucca. Within three days, the leaves fell off the yucca and even the root rotted; the root smelled. The *guineo* also dried up, the leaves were drying up and withering. The plants turned yellow. After a few weeks, everything was dead. All the plants were dead on the ground"[669].

3.128 In the remote reaches of the protected Awá Indigenous and Forest Reserve, the symptoms were the same following the appearance of the spray planes. Witness 40 testifies:

> "It was probably five days later that some hectares of the natural forest, near the Mataje River, died. Three days later the plants began to dry up and fall off, as if they were burned. The leaves fell off the plants and all the branches died. All the plants, big and small, were destroyed. Several species of wild plants that were in that hectare died. I estimate that at least some thirty species of plants that died were used by us in the Awá traditional medical treatments"[670].

3.129 The damage suffered by numerous species is consistent with exposure to a broad spectrum herbicide, not to plant disease or insect infestation[671].

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[669] Witness 30 Declaration, *op. cit*. EM, Vol. IV, Annex 214.

[670] Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

[671] *See* Weller Report, *op. cit.,* p. 3. ER, Vol. II, Annex 3.

3.130 Ecuador observes further that many of the witnesses offer the same or similar esoteric details that further highlight the credibility of their accounts. A number, for instance, recount that the yellowing of the plants in many cases began at the top of the plant and worked its way down to the ground. After describing the effect on his crops, Witness 18 from San Francisco 1, states:

> "I had never seen this type of disease before. When bugs attack the plants, they do it from the root towards the top. In this case, the plants were dying from top to bottom. Besides, I had seen on some occasions in the past that when the plants get sick, only one species is attacked, without affecting other plants. But, during those days, all the plants were affected, from pasture to fruit trees"[672].

3.131 In a similar way, Witness 1 of Salinas recounts that:

> "the tallest fruit trees . . . were the first to dry up at the top. They did not die completely although they did dry up, and no longer produced fruit. The plantain trees were also destroyed quickly. The plantain, planted next to my house, which is a few meters from the river, died first. The plant was undernourished, falling to one side and the fruit started to die"[673].

3.132 Still others are frank in admitting that as bad as the damage was in Ecuador, it was even worse on the Colombian side of the border, precisely as one would expect because of its closer proximity to the spray target. Witness 10, a Colombian resident who had earlier moved to Sucumbíos testifies, for instance, that "[i]n San Miguel and Dios Peña, one can see the same effects from the

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[672] Witness 18 Declaration, *op. cit*. EM, Vol. IV, Annex 204.

[673] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189.

fumigations; after the liquid is left in the air, plants, animals and people get sick. In Colombia the effect is the same as in Ecuador but a little more excessive"[674]. Further to the west in Salinas, Sucumbíos, Witness 1 echoes this testimony: "from my house, one can see the river and Colombia. On the other side, I noticed that the trees were yellow, dry, and dead. It was very similar to what had happened to my crops, it looked like a trail of destruction; although, the Colombian side was slightly more severe"[675].

3.133 Unable to rely on their crops to feed themselves, the residents had to buy their food. By afflicting their domestic animals too, however, the sprayings left them with less money to do so. As explained by anthropologists familiar with the region, the border residents often use animals as a form of "bank account", in which they invest their earnings and then sell when money is needed[676]. The witness statements provide accounts with mutually enforcing details of the illnesses that befell their animals and the consequences to their families. In Salinas, Witness 2 testified: "In the following years, they sprayed again and we lost what little we had over again. History repeated itself: children became sick again and the animals lost their hair and died. Fifty percent of my chickens died,

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[674] Witness 10 Declaration, *op. cit*. EM, Vol. IV, Annex 198.

[675] Witness 1 Declaration, *op. cit*. EM, Vol. IV, Annex 189. *See also* Witness 19 Declaration, *op. cit*. EM, Vol. IV, Annex 205. "It was incredible. On the Colombian side, the land was a desert, where it used be to full of forest. Everything, but everything, was dead . . ."

[676] *See* Whitten et al. Report, *op. cit.,* p. 12. ER, Vol. II, Annex 5.

the same with the fish"[677]. Notably, many of the witnesses, including residents from the villages of Puerto Mestanza, Mataje, Mataje Alto of the Awá Reserve, and Salinas share their recollections of the spray's particularly deadly effect on fish[678].

3.134 The indigenous witness statements corroborate these observations, with a particular emphasis on the spray's effects on wild animal species. As recounted by a Cofán resident of the Cofán-Bermejo Reserve: "The chickens that I had would vomit everything they ate, shake and then die, now I do not have many chickens. We also saw many of the jungle birds become stiff and fall dead to the ground, we saw this about four days after the spraying"[679].

3.135 Ecuador submits that the coherence and consistency of the witness statements it has offered are particularly probative in the circumstances of this case. As stated, both Parties agree that Ecuador's border regions are among the least developed areas of the country. Their chronic lack of basic infrastructure, including transportation and communication, has made them, in Colombia's

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[677] Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 190.

[678] *See, e.g*., Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 190; Witness 10 Declaration, *op. cit*. EM, Vol. IV, Annex 198; Witness 39 Declaration, *op. cit*. EM, Vol. IV, Annex 222; Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223.

[679] Witness 31 Declaration, *op. cit*. EM, Vol. IV, Annex 215.

words, "virtually isolated from the rest of the country"[680]. Exactly right. As Ecuador previously observed in its *Memorial*: "Roads are usually no more than hardened dirt paths and, where it exists at all, public transportation (via an occasional bus) is scarce and infrequent. Communication with the outside world, and even other villages in the region, is generally limited to periodic radio contact"[681]. It is precisely for this reason that the parallels among the witness accounts – from diverse individuals of indigenous, Afro-Ecuadorian and mestizo origin, spread out along the border and physically cut-off from one another – are so remarkable.

3.136 Whatever their origin or wherever they live, be it in Esmeraldas, the scattered outposts along the Sucumbíos-Putumayo border or the indigenous reserves in the region, the Ecuadorian witnesses offer consistent accounts of the effects Colombia's sprayings have had on their health, their crops, their animals and the wild flora and fauna. Colombia would like the Court to believe that these similarities represent a collective delusion, or even a mass conspiracy. But the truth is that achieving the coordination necessary to produce such compelling commonality is quite literally impossible in the remote, impoverished frontier regions. In the end, the only plausible explanation is the simplest: the witnesses

[680] CCM, Chap. 2, para. 2.13; *see also* CCM, Chap. 2, para. 2.15 (stating that "their present difficulties are a continuation of long-term isolation . . .").

[681] EM, Chap. 2, para. 2.24.

are accurately recounting that the spray drifted into Ecuador, and that it impacted them and their surroundings in the ways they have described.

3.137 Throughout the *Counter-Memorial*, Colombia intimates that the region's remoteness and poverty make it impossible to tease out the harms the sprayings have caused. Things were already so bad, Colombia suggests, that it is more plausible to believe that the harms the witnesses identify represent a natural outcome in these already poor conditions than that they are the effects of its sprayings[682]. Colombia's argument in this respect ties into its broader argument that, to the extent they express an opinion as to causation, the witness statements presented with the *Memorial* are entitled to "no weight"[683].

3.138 As a matter of law, Ecuador certainly agrees that the witnesses are not qualified as experts to offer a scientific opinion on the question of causation. But Colombia's argument misses a key point. While the witnesses' opinions on causation, as such, may not constitute proof in and of themselves[684], their statements of fact constitute evidence from which conclusions about causation

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[682] *See* CCM, Chap. 7, para. 7.37 ("[I]t is impossible to tell whether the ailments complained of – in particular gastrointestinal disorders such as vomiting and diarrhea – resulted from the sprayings, or whether they were due to other causes which are common among poorly nourished populations living in precarious hygienic conditions".).

[683] CCM, Chap. 7, para. 7.127.

[684] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America), Judgment, I.C.J. Reports 1986*, para. 68 ("An opinion expressed by a witness is a mere personal and subjective evaluation of a possibility . . . it may, in conjunction with other material, assist the Court in determining a question of fact, but is not proof in itself".).

may be drawn, by experts and most importantly by the Court. In Ecuador's view, the witness statements offer convincing factual evidence relevant to the issue of causation. To a person, the witnesses testify that before the sprayings one state of affairs existed and after the sprayings, in close proximity to them, and after observing the spray fall inside Ecuador, a different state of affairs came into being. The change they all speak of coincided precisely with the advent of Colombia's aerial sprayings, and precisely with the known effects of glyphosate and POEA. This is compelling evidence from which conclusions as to cause and effect may be drawn by the Court.

3.139 Just two examples will suffice for present purposes. Witness 4 from Salinas, Sucumbíos states:

> "In a short period of time, they sprayed for several days, on our community and neighbouring communities. Usually, they fumigated during the day and on clear days, and not when it was rainy. On my farm I had planted about twelve hectares of pasture land, plantain, yucca, coffee, and cacao. The spraying completely ruined all of it. A few days after the spraying, the plants started to turn yellow and then they turned black and died. I had never experienced anything like that. I tried to save the crop with fertilizers but it did not work, and we lost everything . . . . Before the fumigations, a hectare of coffee would yield sixty quintals, and a hectare of maize would yield forty quintals. Now, the coffee yields about five quintals per hectare, and the maize about two quintals. Never before, not even in the case of a drought or in the rainy season, had the land yielded so little"[685].

[685] Witness 4 Declaration, *op. cit*. EM, Vol. IV, Annex 192.

In a similar vein, Witness 41, an Awá resident of the Reserve in Esmeraldas declares:

> "Before the spraying, we were healthy. But after the spraying, many people in my community became sick. Some of the people in the community had bumps all over their bodies. It was strange, I had not seen that before . . . . Not only were the people affected but the animals were too. After the spraying, many of the chickens that we raised became sick, they would not walk but rather remained seated, and within a few days some of them died. The chicks either remained small or did not survive . . . . After the sprayings, all the crops began to dry up. They turned yellow two or three days after the sprayings. The leaves of the sugarcane became withered and they fell off. The yucca leaves also withered, and the maize completely died within a week after the sprayings. The community used to live off the crops that grew in our land, but after the sprayings we lost several crops such as maize"[686].

3.140 Ecuador considers this particularly probative factual evidence of causation in the circumstances of this case. As stated, the subsistence farmers and indigenous peoples alike are tied to the land and the rhythms of nature. Many testify that they have lived on the land in the same location for their entire lives. Indeed, for indigenous populations, the tie with "mother earth" is a central component of their culture[687]. As such, they are finely attuned to even minor

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[686] Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224. *See also* Witness 3 Declaration, *op. cit*. EM, Vol. IV, Annex 191.

[687] *See* Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223; Declaration of María Blanca Chancosa Sánchez, 14 Jan. 2009. EM, Vol. IV, Annex 187; Whitten et al. Report. ER, Vol. II, Annex 5. (*e.g.,* p. 20, "…Cofán people do not believe that they would be able to maintain their culture and identity without residing in their traditional territory's mountain and lowland ecosystems. In their native language of A'ingae, Cofán call themselves *tsampini can'jensundeccu* (dwellers of the forest). In their political discourse, Cofán leaders proclaim, 'Without our Forest, which has been the one constant throughout our history, we are no longer Cofán.' Cofán language,

disruptions in the environment. They are thus uniquely well-qualified to speak to the health of the environment over time and how the changes they observed coincide with the introduction of noxious external elements. Notably, international tribunals have not shied away from assigning witness testimony from indigenous populations significant probative value based on their intimate relationship with the subject-matter of their testimony[688]. As the distinguished arbitral tribunal noted in the *Abyei* arbitration:

> "One other potential source of evidence is witness testimony. For its part, the [Government of Sudan] has criticized the reliability of witness evidence. This Tribunal agrees that where the witnesses rely on knowledge passed down through one or two generations, the precise dating of the evidence which they supply may sometimes be difficult. Nevertheless, *depriving witness evidence per se of all probative value would be unjustifiable*. When defining the historic area of a tribe, an inherently difficult exercise, it is reasonable, and indeed quite logical, to seek information from the tribe members themselves"[689].

3.141 Colombia appears to take issue with demonstrating causation, at least in part, in this manner. Instead, Colombia contends that if it has not been measured and observed in a laboratory, it does not count. This is not only a new rule of evidence, invented by Colombia for this case; it is an entirely inappropriate one,

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cosmology, social life, healing practices, and subsistence patterns interweave profoundly with the Amazonian environment".).

[688] *The Government of Sudan/The Sudan People's Liberation Movement/Army (Abyei Arbitration)*, Arbitral Award, pp. 247, 256, paras. 717, 742 (22 July 2009); *Case of the Indigenous Community Yakye Axa v. Paraguay, Judgment*, IACHR, Series C No. 125, para. 201 (17 June 2005).

[689] *The Government of Sudan/The Sudan People's Liberation Movement/Army (Abyei Arbitration)*, Arbitral Award, pp. 247, para. 717 (22 July 2009) (emphasis added).

especially in this case. Indeed, it is ironic in the extreme for Colombia to argue that only scientific data can be considered: to this day, Colombia has never truthfully acknowledged what is – or was – in the spray mixture, particularly in the period when the evidence shows the chemicals were even more toxic than in later years[690]. How can it be demonstrated scientifically which unidentified substances caused what harms? No litigating State can be expected to hit an invisible (indeed, hidden) target. Moreover, Colombia never gave Ecuador advance – or even after-the-fact – notice of the dates when and locations where sprayings were carried out. Ecuador was thus never in a position to have scientific personnel on-site ready to collect spray samples as they wafted over the border and settled on people, plants, animals, water bodies and the ground.

3.142 Colombia's argument is also legally incorrect. Notably, the *Counter-Memorial* cites no authority for the proposition that only scientific evidence counts – because there is no such authority. In this case, as in all cases, it is for the Court to "[e]xamine all the facts relevant to each of the component elements of the claims advanced by the Parties. In so doing, it will identify the documents relied on and make its own clear assessment of their weight, reliability and value"[691]. Thus, as the Court recently reaffirmed in the *Pulp Mills* case, "in

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[690] *See supra* Chap. 2, paras. 2.17-2.63.

[691] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, I.C.J. Reports 2005*, pp. 200-201, para. 59. *See also Military and Paramilitary*

keeping with its practice, the Court will make its own determination of the facts, on the basis of the evidence presented to it, and then it will apply the relevant rules of international law to those facts which it has found to have existed"[692]. The extent of scientific evidence must be weighed in connection with the record as a whole. This is particularly true in the circumstances of the present case, where obtaining corroborative physical evidence in the field is unusually difficult because of the remoteness of and lack of resources in the areas involved, and the rapidity with which glyphosate dissipates into soil or water.

3.143 In any event, as described above, there is abundant scientific evidence linking Colombia's aerial spraying to the specific harms to people, animals, plants and the environment reported in the witness testimonies, and in contemporaneous reports by the news media and NGOs who visited the affected areas[693], not least of which is the fact that the internationally accepted drift model predicts deposition of herbicide far into Ecuador in amounts that can cause serious harm[694].

Activities (Nicaragua v. United States), *Judgment, I.C.J. Reports 1986*, p. 40, para. 60; *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment*, p. 52, para. 168.

[692] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment*, p. 52, para. 168.

[693] *See supra* Chap. 3, paras. 3.25, 3.44. 3.46, 3.54, 3.89.

[694] *See supra* Chap. 2, paras. 2.198-2.203/

3.144 Interestingly, Colombia's otherwise strident *Counter-Memorial* is notably timid on the subject of what else, other than its sprayings, may have caused the harms universally described by the witnesses and corroborated by multiple contemporaneous accounts and impartial investigations. Colombia identifies just two other possible culprits: first, the deleterious effects of coca cultivation; and second, environmental contamination caused by the exploration for and exploitation of petroleum. Neither alternative Colombia identifies is a plausible cause of the harms suffered by the witnesses.

3.145 Colombia seems particularly enamoured of its claim that the harms identified may be the result of coca cultivation. It offers this as a possible explanation repeatedly in both Chapters 1 and 7 of the *Counter-Memorial*. In Chapter 1, it states: "Health problems in the border area may . . . have something to do with the very reasons for the spray program, since the unlawful cultivation of coca plants carries a serious risk of personal injury poisoning by much more toxic chemicals and harm to the environment"[695]. And in Chapter 7 it repeats: "Alternatively, [the ailments complained of] may be the result of the much more toxic chemicals used in the cultivation and processing of coca in those areas"[696].

[695] CCM, Chap. 1, para. 1.38; *see also ibid.*, para. 1.39.

[696] CCM, Chap. 7, para. 7.37.

3.146 The trouble for Colombia is that, unlike Colombia, Ecuador does not have a coca cultivation problem. According to the reports of the United Nations Office on Drugs and Crime ("UNODC"), there is no significant cultivation of coca in the northern border regions of Ecuador (or anywhere else in Ecuador)[697]. This absence of coca cultivation in Ecuador is reflected in the following graphic, **Figure 3.8,** from the UNODC report entitled *Coca Cultivation in the Andean Region, a Survey of Bolivia, Colombia, Ecuador and Peru*, published in June 2007 (shortly after Colombia stopped aerial spraying within 10 kilometres of the border with Ecuador); the graphic itself is captioned "Coca cultivation density in the Andean Region, 2006"[698]. As the Court can see, unlike Colombia, there are no concentrations of coca cultivation in Ecuador.

3.147 In 2010, the UNODC stated in its World Drug Report that "surveys implemented by UNODC in cooperation with the Government of Ecuador in 2006 and 2008" covering the "provinces in the north of Ecuador bordering Colombia", had "confirmed that the level of coca cultivation was insignificant"[699]. Colombia offers no evidence to the contrary; it makes no attempt at showing that there is any coca cultivation on Ecuador's side of the

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[697] United Nations Office on Drugs and Crime, *World Drug Report 2010*, p. 161 & n.1 (2010). ER, Vol. IV, Annex 110.

[698] United Nations Office on Drugs and Crime, *Coca Cultivation in the Andean Region, A Survey of Bolivia, Colombia, Ecuador and Peru,* p. 2 (June 2007). ER, Vol. IV, Annex 108.

[699] United Nations Office on Drugs and Crime, *World Drug Report 2010*, p. 161 & n.1 (2010). ER, Vol. IV, Annex 110.

Coca Cultivation Density in the Andean Region, 2006

Map 1: Coca cultivation density in the Andean Region, 2006

Sources: National monitoring systems supported by UNODC - Governments of Bolivia, Colombia and Perú
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Figure 3.8

border. Colombia's would-be alternative explanation for the harms experienced in Ecuador is thus not viable.

3.148 Equally without basis is the *Counter-Memorial*'s suggestion that hydrocarbon exploration and exploitation activities are to blame for the harms described in the *Memorial*[700]. There is no petroleum activity in Esmeraldas Province, where harms following Colombia's spraying campaigns have repeatedly resulted. And there is certainly no oil exploration in the Cofán-Bermejo Ecological Reserve, the Awá Indigenous Reserve or the Cayapas-Mataje Ecological Reserve – all of which are documented by the evidence as having suffered the same effects following Colombia's aerial spraying in close proximity to those locations. Insofar as other parts of Ecuador have suffered environmental degradation associated with petroleum production in Sucumbíos, they are generally remote from the areas of Sucumbíos affected by Colombia's spraying.

3.149 Colombia provides not a shred of evidence to support its argument that the harms suffered in Ecuador are attributable to some cause other than its aerial spraying of toxic chemicals in close proximity to the border under operating conditions guaranteed to produce spray drift into Ecuador. There is not a single fact to show that the injuries resulted from the (non-existent) cultivation of coca on the Ecuadorian side of the border; or from petroleum production far removed

[700] CCM, Chap. 2, para. 2.31.

from the places where injuries occurred; or from malnutrition, poverty, lack of infrastructure, presence of illegal armed bands, or any of the other potpourri of hypothetical possibilities thrown out by Colombia to avoid responsibility for the harms the evidence shows it has caused. To the extent that Colombia asserts that other causes may have contributed to these harms, it bears the onus of providing the necessary proof, and it has manifestly failed to do so.

3.150 In the end, despite Colombia's efforts to rid itself of the evidence of harm by any means available, the outcome remains the same. The witness statements and numerous other sources of evidence of harm are more than admissible, they are undeniable. The consistent corroboration of the harm inflicted by Colombia's spraying seen across the spectrum of witness statements, NGO and UN reports, newspaper articles, and more, only strengthens their probative weight and furthers the unavoidable conclusion that Colombia's repeated spraying of chemical herbicides along the border caused harm to the people, plants, and animals of Ecuador.

Section III. The Evidence of Harm Caused in Colombia Corroborates the Evidence of Harm Caused in Ecuador

3.151 The evidence of the harm that Colombia's aerial sprayings have caused in Ecuador is further corroborated by the evidence of the damage they have inflicted

in Colombia itself. As initially described in the *Memorial*[701] and demonstrated further below, the sprayings have caused precisely the same sorts of harms in Colombia as they have in Ecuador, although they have been more severe on the Colombian side of the border because there have been more of them and they have been carried out directly over Colombian territory. In Ecuador's view, this fact is relevant for at least two reasons. *First*, the evidence of harm from Colombia validates the evidence from Ecuador. Taken together with the other elements of proof, the Colombian evidence adds to the corpus of consistent, mutually reinforcing evidence that proves Ecuador's case. *Second*, and relatedly, it underscores the cause-and-effect relationship between the sprayings and the harms in Ecuador. Put simply, the fact that the sprayings caused nearly identical harms in Colombia shows that they are, in fact, the injury-causing agent in Ecuador as well.

3.152 Before proceeding further, a threshold point must be dispensed with. The *Counter-Memorial* professes confusion about whether or not, by invoking harms in Colombia, Ecuador purports to be bringing claims on behalf of Colombian nationals in addition to its own citizens[702]. Indeed, the *Counter-Memorial* spends no less than nine pages of Chapter 1 voicing its confusion[703]. But Ecuador

[701] EM, Chap. 5. paras. 5.100-5.115.

[702] CCM, Chap. 1, paras. 1.14-1.25.

[703] CCM, Chap. 1, paras. 1.14-1.25.

specifically addressed this issue in the *Memorial*, stating: "Ecuador, of course, is not before the Court to press claims on behalf of the people of Colombia. The harms inflicted in Colombia nonetheless merit the Court's attention because they constitute proof of the impacts of the spray mixture Colombia employs"[704]. Under the circumstances, Ecuador considers that there is no serious basis for the confusion Colombia claims to be afflicted by. Although it is wholly unnecessary, Ecuador here reiterates that it brings claims only on behalf of its own citizens. The evidence of harm in Colombia is invoked for corroborative purposes only.

3.153 Curiously, even as it professes confusion about why Ecuador is offering evidence of events in Colombia, the *Counter-Memorial* makes the converse argument; that is, it argues that Ecuador's case is not credible because the sprayings have not caused any appreciable harm in Colombia. At paragraph 1.34 of the *Counter-Memorial*, for example, Colombia states:

> "If mere drift of the spraying mixture across the border into Ecuador had caused the catalogue of harms recited by Ecuador, what would be the position in Colombia itself, the actual target of many thousands of spray missions over 10 years? The result would be carnage, hundreds if not thousands of deaths of humans and large animals, environmental devastation, economic collapse"[705].

3.154 As detailed further in the paragraphs to follow, this description is, sadly, not far from the truth, although more exaggerated. For present purposes the point

[704] EM, Chap. 5, para. 5.101.

[705] CCM, Chap. 1, para. 1.34(1).

is simply that with this argument, Colombia itself recognizes that what happened in Colombia is relevant to understanding what happened in Ecuador. Elsewhere in the *Counter-Memorial*, Colombia helpfully articulates just why that is so. At paragraph 7.43, it states: "It bears emphasizing again that in the aerial sprayings carried out up until 2007 over Colombian territory situated close to the border with Ecuador, exactly the same modalities, mix and procedures as were applied in the rest of the Colombian territory were used"[706]. In Ecuador's view, it is precisely for this reason that the evidence of harm in Colombia sheds important light on the question of harm in Ecuador. Since the same spray mixtures and operational procedures were employed, the fact that the same injuries were caused in Colombia underscores the cause of the harm in Ecuador.

3.155 Aside from professing confusion about why Ecuador presents evidence of the harms the sprayings have caused in Colombia, the *Counter-Memorial* has little to say by way of rebutting the facts Ecuador introduced. As demonstrated in the *Memorial*, the damage the sprayings have caused in Colombia is borne out by reports of international observers and civil society organizations, contemporaneous news reports and even the findings of organs of the Colombian government not engaged in the execution of the aerial spraying programme[707]. Rather than respond, the *Counter-Memorial* elects to disregard this important

[706] CCM, Chap. 7, para. 7.43.

[707] EM, Chap. 5. paras. 5.100-5.115.

evidence. In Ecuador's view, Colombia's failure to engage on the point speaks as powerfully as anything it does say in its otherwise ample *Counter-Memorial*.

3.156 Many of the most alarming reports of damage within Colombian territory come from the Colombian authorities themselves. Because they constitute official statements against interest, these reports are entitled to great weight. As the Court stated in the *Case Concerning Military and Paramilitary Activities in and against Nicaragua* (*Nicaragua v. United States of America*):

> "The Court takes the view that statements of this kind, emanating from high-ranking official political figures, sometimes of the highest rank, are of particular probative value when they acknowledge facts or conduct unfavorable to the State represented by the person who made them. They may be construed as a form of admission"[708].

3.157 Ecuador brought many such examples to the Court's attention in its *Memorial*. Rather than revisit them here, it respectfully refers the Court to the relevant sections of the *Memorial* cited in the footnote below[709]. For purposes of this *Reply*, a few additional examples will suffice.

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[708] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America), Judgment, I.C.J. Reports 1986*, p. 41, para. 64.

[709] *See* EM, Ch. 5, paras. 5.102-5.108; Comptroller General of the Republic of Colombia, Comptroller for the Environment, *Special Audit Regarding Illicit Crop Eradication Policies*, p. 34 (July 2001) ("This drift effect is the result of the combination of different technical and meteorological variables that make this strategy highly susceptible to error. Factors like the height of spraying, the velocity and direction of the wind and the relative humidity are difficult to control, which affects the precision of the sprayings".). EM, Vol. II, Annex 93; Republic of Colombia, Administrative Department of Health (DASALUD) Putumayo Province, Office of

3.158 In 2000, the Colombian Ombudsman Delegated for Collective Rights and Environment wrote to Colombia's Minister of Environment to express his concern about the severe impacts caused by the aerial spraying program:

> "In the last two years, the number of complaints arising primarily from the departments of Guaviare, Putumayo and Cauca have increased. … In many of these cases, a critical situation in the regions after conducting fumigation programs can be observed. The affectation of illicit crops as well as the destruction of legal crops leave whole groups of humans without any sustenance, waves of insecurity and violence are unleashed, valuable

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Planning, Epidemiology Section, *Effects of Aerial Spraying with Glyphosate Valle del Guamuez – San Miguel – Orito, Putumayo*, p.2 (Feb. 2001) (hereinafter "*DASALUD Putumayo Health Study*") ("According to information from the Administrator of the La Dorada Health Center in the municipality of San Miguel, in the town of Agua Clara the poisoning of people exposed to the fumigations was apparent, with symptomology related to skin and eye irritation, nausea, and acute respiratory infection, as well as bronchitis, the flu, colds, and abdominal pain, among others, which corresponds to the findings of epidemiological studies carried out in other places".). EM, Vol. II, Annex 90; Republic of Colombia, Office of the Ombudsman, Ombudsman Report No. 1, *Fumigations and Alternative Development Projects in Putumayo*, pp. 9-10 (9 Feb. 2001) (hereinafter "Colombia Ombudsman Report No. 1"). EM, Vol. II, Annex 91; *see also ibid.*, p. 11 ("Indiscriminate destruction of the little remaining forest, of subsistence crops and medicinal plants, as well as of pastures and fish-farming ponds, among others".); Republic of Colombia, Office of the Ombudsman, *Ombudsman Resolution No. 4, On the Impact of Fumigations on 11 Alternative Development Projects in Putumayo*, p. 5 (12 Feb. 2001) ("the fumigations condemned by this resolution destroyed not only the illicit crops – the target of manual eradication – but also other species necessary for the household subsistence of the beneficiaries of the pacts. Now, these people and communities are facing both the ruin of their household finances as well as a severe food security problem. Given the precarious conditions of this group of people, the action by the State gives rise to a violation of their right to subsistence, which translates into a serious harm to the physical integrity and dignity of the family and its members".). EM, Vol. II, Annex 92; Republic of Colombia, Office of the Ombudsman, *Ombudsman Resolution No. 28, The Coffee Crisis and the Possible Fumigations in the Province of Caldas*, pp. 23-25 (21 May 2003) (footnotes removed). EM, Vol. II, Annex 97. Of course, there is abundant additional evidence from other sources in Colombia regarding the harm to health and the environment caused by the aerial spraying. *See, e.g.*, Marcella Ceballos & Carlos Duarte, *Report of the Observation Mission on the Human Rights Situation in Lower Putumayo*, pp. 15-16 (June 2008). EM, Vol. IV, Annex 171; Declaration of Colombia Witness 3, 20 Feb. 2009. EM, Vol. IV, Annex 227; Declaration of Colombia Witness 9, 5 Mar. 2009. EM, Vol. IV, Annex 232; Declaration of Colombia Witness 8, 4 Mar. 2009. EM, Vol. IV, Annex 231; Declaration of Colombia Witness 1, 20 Feb. 2009. EM, Vol. IV, Annex 225; Declaration of Colombia Witness 2, 20 Feb. 2009. EM, Vol. IV, Annex 226; Declaration of Colombia Witness 5, 20 Feb. 2009. EM, Vol. IV, Annex 229; Declaration of Colombia Witness 6, 20 Feb. 2009. EM, Vol. IV, Annex 230; Declaration of Colombia Witness 10, 5 Mar. 2009. EM, Vol. IV, Annex 233.

> ecosystems to the country are destroyed and the health of the population is affected"[710].

3.159 Two years later, in 2002, Colombia's national Office of the Ombudsman (*Defensoría del Pueblo*) visited Putumayo Department and other areas affected by the aerial spraying programme. It subsequently issued a position statement in which it reported that:

> "a commission comprised of officials from the Ombudsman and other entities recently, in mid November 2001, visited the municipalities of Valle del Guamuez, San Miguel and Puerto Asís and verified the impacts on food crops. The crops that were primarily affected were yucca, plantain, pineapple, corn, cane and rice; similarly, the deaths of 2500 young fish were reported"[711].

On the basis of this and similar findings, the Ombudsman's Office concluded that "[t]he implementation of the eradication program besides posing a threat to the environment and public health in the fumigation zones, has considerably affected the vulnerable segments of the population such as small scale farmers and children"[712].

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[710] Letter from Medardo Galindo Hernandez, Ombudsman, Republic of Colombia, to Juan Mayr Maldonado, Minister of the Environment, Republic of Colombia, p. 1 (24 July 2000). ER, Vol. V, Annex 134.

[711] Republic of Colombia, Office of Ombudsman, *The Implementation of the Strategy of Aerial Eradication of Illicit Crops With Chemicals, From a Constitutional Perspective*, p. 44, n. 19 (Apr. 2003). ER, Vol. V, Annex 146.

[712] *Ibid.*, pp. 55-56. The report also noted that "despite 22 years having elapsed since fumigation operations started in the country, no relevant scientific studies were conducted to determine this substance's effects on health". ER, Vol. V, Annex 146.

3.160 In a later statement, the Ombudsman's Office emphasized that the "[t]he damage to the food crops of farmers and natives has put their food safety at risk" because, without such crops, "an adequate food supply that covers their nutritional needs cannot be guaranteed"[713]. These observations echoed similar statements in which the Ombudsman's Office explained that as a result of the damage caused to crops and animals used for subsistence, people affected by the sprayings faced "both the ruin of their household finances as well as a severe food security problem"[714].

3.161 The Colombian Comptroller General's Office has likewise recognized the injuries caused by Colombia's sprayings. In 2001, it reported on the occurrence of "symptoms of nausea, vomiting, diarrhea, and burning of the eyes, skin and throat after the spraying; reports that coincide with information in the literature and are consistent with the position of the Ministry of Health"[715].

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[713] Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo*, p. 25 (9 Oct. 2002). ER, Vol. V, Annex 145.

[714] Republic of Colombia, Office of the Ombudsman, *Ombudsman Resolution No. 4*, p. 4 (12 Feb. 2001). EM, Vol. II, Annex 92; *see also* EM, Chap. 5, paras. 5.106-5.108.

[715] Comptroller General of the Republic of Colombia, *Plan Colombia: Second Evaluation Report*, p. 44 (10 Dec. 2001). EM, Vol. II, Annex 94.

3.162 As discussed in the *Memorial*, these same symptoms were documented by Colombia's health authorities[716]. For example, the Putumayo Department of Health recorded a dramatic increase in symptoms, including acute respiratory infections, diarrhea, dermatitis, and skin infections following sprayings just 20 kilometres north of the Ecuadorian border in early 2001[717]. Ecuador notes that these harms are precisely the types of harms that have been documented in Ecuador.

3.163 As has been true in Ecuador, the Colombian Office of the Ombudsman reported that the aerial sprayings took a particularly heavy toll on children:

> "In this regard, the increase in medical visits related to skin problems, gastrointestinal, respiratory infections and conjunctivitis, after the fumigations, in the area sprayed, is cause for concern. Even more alarming is that, in most cases it is the children in these regions who are presenting such symptoms. Due to their fragile state, their symptoms tend to become more acute . . ."[718].

3.164 The Ombudsman's Office also reported that, on a number of occasions, the exposure to the spray mixture appeared to have contributed to the death of

[716] EM, Chap. 5, paras. 5.102-5.105.

[717] EM, Chap. 5, para. 5.103.

[718] Republic of Colombia, Office of Ombudsman, *The Implementation of the Strategy of Aerial Eradication of Illicit Crops With Chemicals, From a Constitutional Perspective*, p. 6 (Apr. 2003). ER, Vol. V, Annex 146.

small children: "the Ombudsman has also recognized some cases in which the death of five-year old minors is related to chemical-based aerial spraying"[719].

These findings bring into rather stark relief the *Counter-Memorial*'s bald assertion that "[n]o substantiated complaint of death or serious harm to human health has been presented in Colombia since the inception of the program"[720].

3.165 Colombia's Comptroller General has recognized that the extent of the harm in Colombia is a function, as in Ecuador, not just of the toxicity of the spray mixture and Colombia's recklessness in applying it, but also the unique vulnerability of the population:

> "One of the most troubling aspects [of the aerial spraying programme] are the continual complaints from communities located in the zones targeted by the program, composed primarily of campesinos and colonists with precarious incomes, low levels of nutrition, far from medical treatment centers, and with limited access to health services. Both the physical and mental health of the population has been affected, and family finances have been impacted as well; first, as a direct and indirect result of the fumigations, and second, due to the damage to their financial well-

[719] Republic of Colombia, Office of Ombudsman, *The Implementation of the Strategy of Aerial Eradication of Illicit Crops With Chemicals, From a Constitutional Perspective*, p. 51 (Apr. 2003) ("according to complaints filed by the children's parents, they showed symptoms of poisoning such as vomiting, diarrhea and respiratory and skin problems after the spraying. The poisoning, caused by direct exposure to the herbicide and by the consumption of contaminated water, is considered to be a possible cause of their deaths, hours and days later". ER, Vol. V, Annex 146.

[720] CCM, Chap. 1, para. 1.34(1).

being, which is represented primarily by legal crops and livestock"[721].

3.166 A number of Colombian departmental and local representatives, who do not have the same vested interest in extolling the virtues of the aerial spraying programme as elements of the national government in Bogotá, have also complained of the severe damage caused by the spraying carried out in their regions. In 2007, for instance, the Governor of Putumayo Department denounced the sprayings, stating that the damage caused to legal crops by the aerial spraying program was "causing an economic crisis and displacement of the population"[722]. Other examples include the mayor of Puerto Guzmán, Putumayo, who in 2000 reported that at least seven people had died as a consequence of aerial sprayings conducted in the area[723]. Later, in 2001, the Governors of six departments, including Putumayo and Nariño along the Ecuadorian border, denounced the sprayings due to their impacts on human health, legal crops, and the environment, and appealed to the national government to instead pursue a strategy of manual eradication[724].

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[721] Comptroller General of the Republic of Colombia, *Plan Colombia: Third Evaluation Report*, p. 61 (Aug. 2002). ER, Vol. V, Annex 143.

[722] "Putumayo: Governor Denounces Fumigations", HOY (Quito, 29 July 2007). ER, Vol. IV, Annex 85.

[723] "Mayor Denounces Fumigations", EL UNIVERSO (Guayaquil, 22 Aug. 2000). ER, Vol. IV, Annex 56.

[724] "No To Fumigation: Governors", EL TIEMPO (Bogotá, 15 Jan. 2001). ER, Vol. IV, Annex 59.

3.167 The extensive harm in Colombia has also been substantiated by international observers. Following a March 2004 visit to Colombia, the UN Situation of Human Rights and Fundamental Freedoms of Indigenous People, Mr. Rodolfo Stavenhagen, found "adverse effects of indiscriminate spraying, including environmental damage to the topsoil, fauna, flora and water, the destruction of subsistence crops and direct damage to human health"[725]. The Special Rapporteur was sufficiently concerned about the damage caused by Colombia's aerial spraying program that he concluded his report with the following recommendation: "[e]xcept where expressly requested by an indigenous community which has been fully apprised of the implications, no aerial spraying of illicit crops should take place near indigenous settlements or sources of provisions"[726]. He arrived at this conclusion after meeting with high-ranking governmental officials in Bogotá, including then-President Álvaro Uribe, as well as personally visiting the departments of Cauca, César and Putumayo[727]. During these local visits, he met with departmental and local officials, members

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[725] *Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, Mr. Rodolfo Stavenhagen*, Mission to Colombia U.N. Doc. E/CN.4/2005/88/Add.2, para. 50 (10 Nov. 2004). ER, Vol. IV, Annex 102; *see also ibid*., para. 82. Mr. Stavenhagen reported that the Awá had been particularly affected: "The Awá community in Nariño has informed the Special Rapporteur of various kinds of damage caused over the last three years to large tracts of rainforest in several areas of the municipalities of Tumaco and Barbacoas, as a result of spraying with glyphosate. The greatest damage was done, they say, to sources of fresh water, killing native fish and affecting human health, causing aching bones, vomiting, dizziness, fever and other ailments, particularly among children." *Ibid.*, para. 51.

[726] *Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, Mr. Rodolfo Stavenhagen*, Mission to Colombia U.N. Doc. E/CN.4/2005/88/Add.2, para. 106 (10 Nov. 2004). ER, Vol. IV, Annex 102.

[727] *Ibid.,* para. 8.

of civil-society and grass-roots associations, and representatives of more than 30 indigenous communities[728].

3.168 The Special Rapporteur on the Right to Food, Mr. Jean Ziegler, reached the same conclusions as Mr. Stavenhagen, also finding cause for concern about the impacts of aerial spraying in Colombia. Mr. Ziegler highlighted the lack of clarity and information regarding the chemicals used in the spray mixture and their concentrations, noting that the "proportion of glyphosate being employed and the actual composition of the final product being used are unknown"[729]. As to food, Mr. Ziegler explained: "the concern of the Special Rapporteurs is not just limited to food security risk but also to the right to food free from harmful substances"[730]. Mr. Ziegler cited, in particular, to evidence from the Colombian police documenting extensive damage to crops, resident health, and animals following a 2001 spraying campaign[731]. He also commented on how the harms experienced in Colombia have direct ramifications for Ecuador: "Even the Ecuadorian Red Cross acknowledges that the second largest case for

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[728] *Ibid.,* para. 9.

[729] *Report of the Special Rapporteur on the Right to Food, Jean Ziegler, Addendum: Communications Sent to Governments and Other Actors and Replies Received*, U.N. Doc. A/HRC/4/30/Add.1, para. 17 (18 May 2007). EM, Vol. II, Annex 33.

[730] *Ibid.,* para. 17 (18 May 2007). EM, Vol. II, Annex 33.

[731] *Ibid.*

displacement of the Colombian population to Ecuador, 54%, is due to the sprayings that affect their products"[732].

3.169 There is also a flood of contemporaneous news reports corroborating the extensive damage caused by the aerial spraying programme inside Colombia. Ecuador has collected a number of these reports in the Annexes to this *Reply*. It will not burden the Court by examining their contents here. Instead, it respectfully refers the Court to the relevant annexes[733]. The essential point is that these media reports contain contemporaneous accounts of harms in Colombia that further corroborate the accounts of harm emanating from Ecuador.

3.170 To the extent that the *Counter-Memorial* makes any effort whatsoever to controvert this evidence, it focuses on the limited number of successful claims made under the compensation program it established for farmers who have suffered harm to their lawful crops. According to the *Counter-Memorial*,

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[732] *Ibid.*

[733] *See e.g.*, Larry Rohter, "To Colombians, Drug War is Toxic Enemy", THE NEW YORK TIMES (New York, 1 May 2000). ER, Vol. IV, Annex 54; "The Void of the Fumigations", EL TIEMPO (Bogotá, 28 May 2000). ER, Vol. IV, Annex 55; Juan Forero, "No Crops Spared in Colombia's Coca War", THE NEW YORK TIMES (New York, 31 Jan. 2001). ER, Vol. IV, Annex 60; "Fumigation Dispute", EL TIEMPO (Bogotá, 22 July 2001). ER, Vol. IV, Annex 62; "Colombia Denounces Indiscriminate Spraying in Putumayo", EL COMERCIO (Quito, 10 Jan. 2002). ER, Vol. IV, Annex 64; "Another Controversy Over Fumigation", EL COMERCIO (Quito, 9 July 2002). ER, Vol. IV, Annex 67; "Requesting an End to Fumigations", EL TIEMPO (Bogotá, 10 Oct. 2002). ER, Vol. IV, Annex 72; "Fumigations Cause Concern in Putumayo", EL COMERCIO (Quito, 10 Nov. 2002). ER, Vol. IV, Annex 73; "Glyphosate Rain", EL TIEMPO (Bogotá, 25 Feb. 2003). ER, Vol. IV, Annex 74; "Between Faith and Fumigations", EL TIEMPO (Bogotá, 10 May 2002). ER, Vol. IV, Annex 66; "Spray Program on Indigenous Territories Is Struggling", EL TIEMPO (Bogotá, 28 Apr. 2003). ER, Vol. IV, Annex 75.

between 2002 and 2008, there were only 117 cases in which compensation was actually awarded[734]. Presumably, this is meant to show that the off-target impacts are more limited than the evidence cited above might suggest. If that is indeed Colombia's point, it is manifestly not credible in light of the spray flight data discussed in Chapter 2. The data Ecuador secured shows a wholesale disregard – by a staggering margin – of what Colombia itself refers to as "mandatory" flight parameters. Given this, combined with the fact that Colombia has conducted literally hundreds of thousands of spray flights since Plan Colombia began, the fact that there have only been 117 successful claims since the programme began says more about the unfairness of the compensation program than the harmlessness of the sprayings. Moreover, 117 compensated claims is certainly not evidence of the *lack* of harm in Colombia.

3.171 Colombia also does not bother to mention that during the same time period (2002-2008), many thousands of complaints were submitted. According to the Colombian Comptroller General, in 2002 alone, the Ministry of Justice received 4,500 complaints[735]. Still other complaints were directed to the

[734] CCM, Chap. 4, para. 4.22; *see also* CCM, Chaps. 1 and 7, paras. 1.34(1), 7.174.

[735] Comptroller General of the Republic of Colombia, *Plan Colombia: Fifth Evaluation Report*, p. 36 (Dec. 2004). ER, Vol. V, Annex 152.

Colombian Ombudsman's Office, which reported receiving 6,553 complaints by the end of 2001[736].

3.172 The one thing that is clear from these numbers is that the vast majority of claims have gone uncompensated. Given that the cards are stacked so heavily against the claimants, this is not surprising. DIRAN's compensation program was created in 2001 and involves a lengthy and mind-numbingly complex process, requiring, among other things, the presentation of a deed (a legal instrument which many landowners in the remote locations affected by the spraying programme simply do not have); two field visits (which are not conducted if there is "public unrest", a near ubiquitous condition in Colombia's southern Departments); and additional confirmatory evidence (including spray records and satellite images)[737]. To say that these requirements exceed the means of the vast majority of *campesinos* is to belabour the obvious. For this reason,

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[736] Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo*, p. 24 (9 Oct. 2002). ER, Vol. V, Annex 145.

[737] Resolution No. 017 of 4 October 2001 of the National Narcotics Council of Colombia, Art. 4, 5, 8, 13. CCM, Vol. II, Annex 43. In 2007, the National Narcotics Council found it "necessary to amend [the compensation program] in order to make its implementation faster and efficient and this way determine the alleged liability of the State", however the program enacted in 2007 continues to be structured in a way that make a compensation award nearly impossible for the claimant. *See* Resolution No. 008 of 2 March 2007 of the National Narcotics Council of Colombia. CCM, Vol. II, Annex 61.

among others, the Colombian Ombudsman's Office has called the programme "inadequate and ineffective"[738].

3.173 The evident inadequacy of the Colombian compensation programme stems at least in part from the fact that it is administered by the very entities that are responsible for the spray programme, *i.e.*, the DNE and the Antinarcotics Police. Noting this conflict of interest, the Colombian Comptroller General stated that:

> "This procedure has serious flaws, among others, and most obvious is that the same agencies responsible for carrying out the sprayings, the DNE [National Narcotics Directorate] and the Anti-Narcotics Division of the Police, are charged with evaluating the claims for damages, thus becoming judge and party in the conflict"[739].

Under the circumstances, perhaps the most remarkable feature of the compensation program is that *any* of the claims managed to succeed.

3.174 With the totality of mutually corroborating evidence decisively against it, it is difficult to understand how Colombia can continue to maintain that the massive aerial spraying of chemical herbicide across swathes of territory in reckless disregard of all operational and safety requirements, without ever having

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[738] Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo*, p. 22-23 (9 Oct. 2002). ER, Vol. V, Annex 145.

[739] Comptroller General of the Republic of Colombia, *Plan Colombia: Fourth Evaluation Report*, p. 37 (July 2003). EM, Vol. II, Annex 98.

conducted an environmental impact assessment to assess the harms, has caused no harms. Its own evidence attests to the contrary in Colombia, as it does in Ecuador.

Conclusion

3.175 In summary, this Chapter provides incontrovertible evidence that aerial spraying drifted across the boundary and caused measurable and significant harm to people, to livestock, to animals, to crops and to the environment, in areas within 10 kilometres of the border with Colombia, in Sucumbíos and Esmeraldas Provinces. The harm extends to indigenous peoples and their communities. The evidence is extensive and conclusive, coming as it does from a range of different sources, all of which confirm and are consistent with each other. In particular, this Chapter allows the following conclusions to be drawn as to the evidence of harm:

(1) Newly available flight data information proves the dates and locations of sprayings and the reckless conditions under which they were carried out, and provides clear evidence in support of the facts set forth in the *Memorial*; of particular probative value are individual witness statements, contemporaneous UN and other observation mission reports, press reports, scientific studies and reports from Colombia.

(2) Colombia has misunderstood and misrepresented the evidentiary value of the material on which Ecuador relies, including witness testimonies, that provide conclusive evidence as to the effects of the spraying on people, crops, property and the environment.

(3) The evidence of harms occurring in Ecuador are confirmed by the consistent evidence of the same harms arising in Colombia.

CHAPTER 4.

COLOMBIA'S FAILURE TO CONDUCT AN ENVIRONMENTAL IMPACT ASSESSMENT, AND OTHER FAILURES TO PREVENT, OR EVEN ASSESS, HARM TO ECUADOR

4.1 The Parties agree that Colombia's aerial spraying programme required a transboundary environmental impact assessment ("EIA"). The *Counter-Memorial* concedes, "Colombia was, no doubt, obliged to consider potential impacts on its neighbours, and on the environment, in formulating and implementing the aerial spraying program"[740]. Colombia also does not dispute that it was required to carry out a transboundary EIA *prior* to beginning the spraying programme along or near the border with Ecuador. This is self-evident. An EIA is the means by which regulatory authorities determine whether a project should be permitted, and if so, for deciding what restrictions must be enforced to prevent or minimize risk to the surrounding environment, including human settlements. Carrying out an EIA *before* a project begins is therefore a fundamental necessity. This is especially so when the contemplated undertaking is as potentially damaging as the aerial spraying of entire areas with a potent herbicide mixture whose known elements are understood to harm human health and indiscriminately kill the plants it comes in contact with. The *Counter-Memorial* does not dare to disagree.

4.2 Yet, as shown in this Chapter, Colombia did not carry out a transboundary EIA before spraying along the border with Ecuador. Nor did it conduct an EIA at any time thereafter. The *Counter-Memorial* does not deny that a transboundary

[740] Counter-Memorial of Colombia, Vol. I, Chap. 1, para. 1.40 (29 Mar. 2010) (hereinafter "CCM").

EIA was never carried out. Instead, it tries to defend that failure by asserting that an EIA is not required under *Colombian municipal law*. How does Colombia justify such a remarkable claim? By stating that it enacted legislation which exempted the programme from requiring an EIA. Of course, Colombia's self-serving domestic legislation cannot trump its international legal obligations in regard to conducting a transboundary EIA. But the legislative manoeuvring is nonetheless relevant because it reveals the lengths to which Colombia has gone to avoid carrying out an EIA in regard to the aerial spraying programme – even eliminating the domestic legal requirement to assess environmental impacts *in Colombia* – because it knows very well that if it ever carried out an EIA in regard to the programme the results would make aerial spraying impossible. Simply put, the spraying programme could not survive an EIA that meets even the most minimal standards, and Colombia knows it. Hence it dispensed with the EIA altogether, and conveniently changed its own laws to give its omission a veneer of legality.

4.3 In place of an EIA, the *Counter-Memorial* says that Colombia substituted an "Environmental Management Plan" ("EMP")[741]. This document bears scant relation to an EIA, and does not even purport to be one[742]. The Court has already

[741] *See* CCM, Chap. 4, paras. 4.10-4.11.

[742] *See* CCM, Chap. 6, paras. 6.23-6.24 ("Colombia had only developed an Environmental Management Plan . . . and not an Environmental Impact Assessment".) (internal quotation omitted). *See also* Claudia Rojas Quiñonez, Esq., *The Aerial Spray Program and Violations of*

been introduced to the EMP in Chapter 2 of this *Reply*: this is the document that, *inter alia*, establishes the spray programme's operational requirements for the purpose of preventing spray drift onto non-target locations, including the maximum altitude for spray dispersal, spray application rate and droplet size. Ecuador has already shown that Colombia's spray pilots routinely ignored these requirements on tens of thousands of spray flights along or near the border, making spray drift into Ecuador inevitable. Although these massive and pervasive violations of the EMP are of critical importance in this case, they are not Colombia's only violations of the EMP. In this Chapter, Ecuador shows that Colombia also failed to comply with its obligations under the EMP to assess the environmental impacts of its aerial spraying programme, despite the fact that it was ordered in 2004 by the nation's highest administrative tribunal – the Council of State – to do so. Chiefly, the evidence of these violations of the EMP is supplied by the Government of Colombia itself. On repeated occasions Colombia's own Ministry of Environment, Comptroller General and National Ombudsman criticised the National Narcotics Directorate (Dirección Nacional de Estupefacientes, "DNE") for failing to fulfil its responsibilities under the EMP to carry out the required environmental impact studies. In fact, the DNE's refusal to conduct any environmental impact assessments in regard to the aerial spraying

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Colombia's Domestic Laws Regarding the Environment and the Rights of Indigenous Peoples, paras. 36-41 (describing the difference between an EIA and an EMP under Colombian law) (hereinafter "Rojas Report) (Jan. 2011). ER, Vol. II, Annex 8.

programme led the Environment Ministry to impose *sanctions* on it[743]. But it still refused to comply.

4.4 In light of these facts, it is not surprising that no actual environmental impact studies were ever carried out – neither prior to (as required by international law) nor at any time after the aerial spraying programme was put into operation. The *Counter-Memorial* is left to cite only three studies of any kind: a minor scientific study on glyphosate that occurred 13 years before aerial spraying began near Ecuador; and two others that took place five and nine years, respectively, *after* spraying commenced along the border[744]. None of these studies included even the most rudimentary elements of a transboundary EIA. In particular, they failed to evaluate the specific herbicide formulations that Colombia uses (or has used) in the programme; and they failed to assess transboundary impacts in Ecuador, including via spray drift.

4.5 What is apparent from Colombia's consistent conduct is that environmental protection and human rights are set aside in favour of drug eradication. This has been the case from the time the aerial spraying programme began until the present day, and at all times in between. To be sure, the

[743] *See infra*, Chap. 4, para. 4.65; Republic of Colombia, Ministry of Environment Resolution No. 0670, Whereby a sanction is imposed and other decisions are made (19 June 2003). EM, Vol. II, Annex 19.

[744] CCM, Chap. 4, paras. 4.8-4.19.

Environment Ministry, the Comptroller General and the National Ombudsman have spoken out against the programme – but no one in authority pays any attention to them: certainly not the DNE or the Anti-Narcotics Direction of the Colombian National Police ("DIRAN"), the drug enforcement and anti-narcotics agencies which are charged with carrying out the aerial spraying programme. That they have been free to ignore these other government agencies – as well as Colombia's highest administrative tribunal – attests to the priority given at the highest levels of the Government of Colombia to drug eradication, even at the expense of environmental protection and the human rights of mostly impoverished farmers, villagers, and indigenous peoples regularly doused with the spray mixture. It is not for Ecuador to comment on the wisdom or morality of this policy. Colombia is free to act in this manner if it so chooses – at least in regard to its own territory and nationals. But, as important as the fight against illicit drugs may be to Colombia (and Ecuador, as well, for that matter), Colombia is not free to conduct aerial spraying operations in a manner that harms the environment in Ecuador, or harms or violates the human rights of Ecuadorian nationals.

4.6 This Chapter is organized as follows. **Section I** establishes that Colombia failed to assess environmental impacts *before* it started to spray near Ecuador. This point is hardly in dispute. The *Counter-Memorial* makes only the feeblest of attempts to claim any impact assessments were performed before January 2000

when the spraying began along the border with Ecuador. The scant evidence that Colombia cites – a small-scale test on glyphosate conducted over a decade before spraying commenced – is facially inadequate. So inadequate, in fact, that the *Counter-Memorial* relegates it to a footnote[745].

4.7 In **Section II,** Ecuador demonstrates that Colombia also did not assess environmental impacts *after* it started spraying. Colombia cites only two studies after the commencement of spraying in 2000, neither of which comes close to an EIA, let alone a transboundary assessment of impacts on Ecuador. The first study did not take place until 2005, over five years after Colombia began to spray near Ecuador, and the second was not until 2009, four years later still. Critically, neither study assessed environmental risks to Ecuador, its people, animals or plant-life. Nor did they evaluate the impacts of the particular chemical mixture the *Counter-Memorial* claims Colombia used for the first five years of the aerial spraying programme, much less the elements in the mixture which Colombia has used, but not disclosed. And, worst of all, the 2005 and 2009 studies invoked by the *Counter-Memorial* were based on Colombia's false representations that it operates the spray programme in strict compliance with the operational requirements that prevent spray drift, including aircraft speed, height of spray release, application rate, droplet size, time of day, etc. Therefore, although the model used for measuring drift is an acceptable one, the results are meaningless

[745] CCM, Chap. 4, para. 4.8, n. 253.

because the inputs are completely wrong. As the saying goes: garbage in, garbage out.

4.8 **Section III** demonstrates that the aerial spraying programme also violates other important operational and safety requirements, both within and external to the EMP. These include compliance with label instructions for safe usage of each of the products that Colombia has sprayed near Ecuador, including the label instructions for Roundup Export, Roundup Ultra, Roundup SL and GLY-41. These violations are highly probative of a likelihood of harm, and evidence a breach of Colombia's duty of due diligence, especially because compliance with product labelling instructions for pesticides is mandatory in Colombia. The violations thus transgress Colombia's *own* standards for what is required for the safe application of the products used in the spray mixture, including those required to avoid spray drift.

4.9 Finally, **Section IV** demonstrates that Colombia's aerial spraying programme could not be conducted in other jurisdictions throughout the world, including the European Union ("EU"), which has banned aerial spraying, subject only to a limited ability to derogate in narrow and highly controlled circumstances. Colombia's aerial spraying programme would also be prohibited by the environmental laws of numerous other States. These are further

indications that the irresponsible manner in which Colombia sprays toxic herbicides near Ecuador is dangerous, and prone to cause transboundary harm.

Section I. Colombia's Failure to Assess Environmental Impacts Before the Aerial Spraying Programme Was Commenced

4.10 It will doubtless not have escaped the Court's attention that the *Counter-Memorial* nowhere presents the results of an EIA. The reason for that omission is not in dispute: no EIA was carried out.

4.11 Colombia's defence of its failure to carry out an EIA is risible: it claims none was required under its domestic law because when new legislation was enacted in 1993 it created a "transitional regime" that exempted pre-existing un-licensed projects from having to carry out EIAs. As Colombia states at paragraphs 4.10-4.11 of the *Counter-Memorial*:

> "In December 1993, the Law on the Environment was passed. In 1994, a regulatory decree adopted under that Law provided that activities – including the aerial spraying of illicit crops – that had been authorized and begun prior to that date could continue . . .
>
> The new legal regime expressly set out the activities requiring prior environmental authorization; the application of pesticides was not included among them"[746].

4.12 This won't fly. Colombia cannot avoid its obligation under general international law to carry out a transboundary EIA before starting a project

[746] CCM, Chap. 4, paras. 4.10-4.11.

capable of damaging a neighbouring State by declaring that, as a matter of municipal law, no EIA is required[747].

4.13 Absent an EIA, it is hardly surprising that the evidence that Colombia conducted any sort of assessment of environmental impacts prior to spraying near the border with Ecuador is presented in a single footnote – Footnote 253. According to this footnote, at some point "in the 1980s", a private company, SGS Colombia, "analyzed the results of several soil and water samples following the application of glyphosate" in a national park in Sierra Nevada de Santa Marta, Colombia. That is all. The *Counter-Memorial*, in effect, concedes that there are no other scientific assessments showing that Colombia carried out anything resembling an EIA prior to spraying near Ecuador.

4.14 Ecuador need not detain the Court by dwelling on why this limited study, conducted well over a decade before spraying commenced near its territory, was inadequate to assess the risks of harm to people, plants, animals or the environment in Ecuador. The study was limited to measuring glyphosate residue

[747] As discussed in greater detail in Chapter 6, the Court recently confirmed in the *Case Concerning Pulp Mills on the River Uruguay* that States have an obligation under general international law to "undertake an environmental impact assessment where there is a risk that the proposed activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the [environmental quality of a shared or transboundary resource] did not undertake an environmental impact assessment on the potential effects of such works". *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment*, p. 60, para. 204 (2010). The Court made clear that "an environmental impact assessment must be conducted *prior* to the implementation of a project". *Ibid.*, p. 60, para. 205 (emphasis added).

in a small number of soil and water samples taken from areas that had been sprayed between two and five months earlier[748], despite the fact that, according to Colombia, glyphosate biodegrades in tropical soils in less than 7 days[749]. Nor did it assess spray drift, including spraying at various heights, speeds and application rates[750]. It also did not assess impacts to human health, off-target plant-life or animals[751]. No analysis was done on either of the two spray formulations that the *Counter-Memorial* admits Colombia sprayed in areas adjacent to Ecuador, namely Roundup SL and GLY-41, or on Roundup Export (the product the U.S. government reported Colombia was using), or on Roundup Ultra (the product Colombia claims it sprayed in diplomatic exchanges with Ecuador)[752].

4.15 Indeed, the study is so inadequate that the *Counter-Memorial* acknowledges Colombia could not comply with a request from Ecuador, made in October 2003, that it provide any "Environmental Impact Assessment" that had

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[748] SGS (Societé Génerale de Surveillance, S.A.) Colombia S.A., "Report of Contamination Control for glyphosate application at the Sierra of Santa Marta", p. 5 (1987). CCM, Vol. III, Annex 123.

[749] Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador, p. 3 (14 July 2001). EM, Vol. II, Annex 42.

[750] SGS (Société Générale de Surveillance, S.A.) Colombia S.A., "Report of Contamination Control for glyphosate application at the Sierra of Santa Marta" (1987). CCM, Vol. III, Annex 123.

[751] *Ibid.*

[752] *Ibid.* The study refers only to "Roundup" without stating which, if any, of the formulations Colombia has used near Ecuador was studied.

been "conducted prior to sprayings of Glyphosate"[753]. The reason this simple request could not be granted is patent: there was nothing to provide.

4.16 Colombia argues that in place of an EIA it prepared an EMP[754]. Without elaborating, the *Counter-Memorial* asserts that an EMP "is equivalent to an environmental impact assessment"[755]. Colombia knows better. Its EMP comes nowhere close to being an EIA. An environmental impact assessment is just that – it is a comprehensive assessment of the potential environmental impacts of a project. Its fundamental objective is to identify the harms a project might cause, *before* they occur, in order to determine whether a project should proceed and to determine the measures required to prevent or limit these harms[756]. In order to attain an environmental license in Colombia, one must *first* execute an EIA to determine the harms[757]. An EMP is just one of the documents that accompany the EIA in this process[758]. It is only after the extent and type of harms have been identified in the EIA that the EMP can be created to manage and prevent the project's identified harms once it is underway. Thus, Colombia carried out its

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[753] CCM, Chap. 6, paras. 6.24.

[754] *Ibid.*, Chap. 4, paras. 4.10-4.11.

[755] *Ibid.*, Chap. 4, para. 4.10

[756] *See* Reinhard Joas, Ph.D., *The Development of the 2009 European Union Pesticides Directive With Particular Focus on Aerial Spraying*, p. 15 (Jan. 2011) (hereinafter "Joas Report"). ER, Vol. II, Annex 7; Rojas Report, *op. cit.*, paras. 36-38, 96. ER, Vol. II, Annex 8.

[757] *See* Rojas Report, *op. cit.*, paras. 33-38, 96 (discussing the requirements of Law 99 of 1993). ER, Vol. II, Annex 8.

[758] *See ibid.*, paras. 39-41, 96. ER, Vol. II, Annex 8.

mass-scale aerial spraying programme without ever having first assessed and understood the harms it would cause. The ostensible plan to address these harms, the EMP, was designed in a void, uninformed of the damage it was created to prevent.

4.17 The Colombian Ministry for the Environment recognized that the EMP was not equivalent to, and could not substitute for, an EIA. And it should know: it was the agency responsible for approving the EMP. As shown below, it repeatedly demanded that EIAs be carried out as part of the EMP. Each of these demands was rebuffed by the organ of the Colombian government that was assigned responsibility for conducting the impact assessments of the aerial spraying programme: the DNE. This, self-evidently, was a major flaw in the EMP. By putting environmental protection in the hands of the anti-narcotics police – whose main mission is drug eradication – the EMP effectively placed the fox in charge of the henhouse. Thus, whenever it was called on – or ordered – by the Environment Ministry to assess the environmental impacts of the aerial spraying programme, the DNE just said "No". And no one was able to make the DNE comply. The DNE was fined and sanctioned; Colombian courts and agencies even ordered the aerial spraying programme to be suspended until the DNE complied with the EMP. Yet the DNE continued to carry out the spraying programme in defiance of these orders.

4.18 The *Counter-Memorial* makes only a brief reference to the development of the EMP. It says: "The Ministry for the Environment and the National Narcotics Directorate *jointly worked* in developing the EMP. In November 2001, following several adjustments arising from initial field experience, the EMP was formally adopted by Resolution 1065 of 2001"[759]. The *Counter-Memorial* is silent in regard to the contents of the EMP, its requirement that environmental impacts be assessed, and the Environment Ministry's unsuccessful efforts to get the DNE to make these assessments. It thus falls to Ecuador to tell the story.

4.19 What happened is this. When the Colombian Government first began aerial spraying on an experimental basis in northern Colombia in 1984, INDIRENA (as the Ministry of Environment was then known) insisted that the Colombian National Police (the agency then responsible for the spraying) carry out the legally required impact studies. Specifically, it presented the Ministry's "demand that an ecological and environmental study be submitted prior to the glyphosate-based aerial spraying actions in any area of the country"[760]. To that end, INDIRENA provided the National Police with terms of reference for the

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[759] CCM, Chap. 4, para. 4.13 (emphasis added).

[760] Republic of Colombia, Ministry of Agriculture, *Study Proposal for the Environmental Management of the National Park Areas of Sierra Nevada de Santa Marta and Buffer Zones Affected by Marijuana Crops and their Destruction by Aerial Spraying with Glyphosate*, pp. 3-4 (31 July 1986). ER, Vol. V, Annex 120. *See also* Rojas Report, *op. cit.*, paras. 25 & 64 (explaining how the "EES, according to article 28 of the CNRNR, was required prior to obtaining [an Environmental] License and consisted of a study that had to be carried out before the performance of activities that could produce serious environmental deterioration".). ER, Vol. II, Annex 8.

studies, and registered an official protest for having been excluded from the decision to spray glyphosate and for the manner in which it was being applied[761]. The National Police ignored INDIRENA's directive and continued spraying[762].

4.20 Two years later, INDIRENA again insisted that environmental studies be carried out. It stated that "[t]hese studies" had to "consist of basic research on Ecology, Socioeconomics, Culture and the identification of adverse effects on human populations, plants and animals caused by the spraying of Glyphosate", and were necessary to "enable the proposal of environmental management measures of a socio-economic and ecological nature"[763]. In light of its serious concerns with the spray programme, INDIRENA stated that "legal and moral obligations" compelled it to "oppose[]" the "spraying with glyphosate in areas belonging to Colombia's National Park System" and, with respect to other areas being considered for aerial spraying, to conclude that "the preparation, presentation, evaluation and approval of the environmental studies required by Law" was "essential"[764].

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[761] Republic of Colombia, Ministry of Agriculture, *Study Proposal for the Environmental Management of the National Park Areas of Sierra Nevada de Santa Marta and Buffer Zones Affected by Marijuana Crops and their Destruction by Aerial Spraying with Glyphosate*, p. 4 (31 July 1986). ER, Vol. V, Annex 120.

[762] *Ibid.*, p. 5.

[763] *Ibid.*, pp. 3-4.

[764] Republic of Colombia, Ministry of Agriculture, *Study Proposal for the Environmental Management of the National Park Areas of Sierra Nevada de Santa Marta and Buffer Zones*

4.21 When three scientists from INDIRENA later observed first-hand spraying operations and their environmental impacts, their report was brutally frank in its criticism, finding that the sprayings were "ecologically . . . destroying" the area[765]. With respect to the missing environmental impact studies, INDIRENA stated:

> "Glyphosate is a harmful chemical agent, it is not recommended for aerial application, its danger is even greater if the manner and intensity of application during almost the entire year is taken into account. Its effects have not been studied for the type of tropical ecosystems such as those exists in the Sierra Nevada de Santa Marta"[766].

And it further noted that "the National Police did not respond to prior orders and that no type of research regarding the effect of fumigation has been initiated"[767]. INDIRENA therefore reiterated the urgent need to carry out the required studies[768].

Affected by Marijuana Crops and their Destruction by Aerial Spraying with Glyphosate, p. 12 (31 July 1986). ER, Vol. V, Annex 120.

[765] Republic of Colombia, Ministry of Agriculture, Technical Commission, *Specification of the Terms of Reference for Environmental Research in the Sierra Nevada of Santa Marta Affected by Marijuana Crops and Spraying with Glyphosate*, p. 2 (1986). ER, Vol. V, Annex 121.

[766] *Ibid.*, p. 1 (1986).

[767] *Ibid.*, p. 27 (1986).

[768] *Ibid.*, p. 2 (1986) ("[T]he Terms of Reference proposed by INDERENA in the document submitted to the National Narcotics Council on July 1986 are necessary in order to, in an immediate fashion, further studies as well as the necessary measures that should be taken to overcome the problem that is ecologically . . . destroying historic areas of the Sierra Nevada de Santa Marta".).

4.22 These studies were never done. Eight years later, in 1994, the Ministry of Environment was still calling for environmental impact studies to be carried out, and making it clear that such studies remained obligatory notwithstanding the recent passage of the environmental legislation that the *Counter-Memorial* cites to claim an exemption from EIA obligations. In a December 1994 letter to the Minister of Justice, the Minister of Environment stated: "the Ministry of Environment will solicit an environmental impact assessment for the fumigations with glyphosate from the National Narcotics Council, in order to supplement the environmental measures adopted so that they respond to the new requirements of the new law 99 of 1993"[769].

4.23 Soon thereafter, in February 1995, representatives from the relevant Colombian governmental agencies, including the Ministry of Environment, the Agriculture Institute, the Ministry of Health, and the Ombudsman for Health and Social Security, met to assess whether the Colombian government was in compliance with the regulations in force concerning the aerial spraying programme[770]. They concluded, among other things, that the aerial spraying was being carried out "without the environmental licenses that both the Ministry of Health and the Ministry of the Environment must provide", that the spraying was

[769] Letter from Cecilia Lopez Montano, Minister of Environment, Republic of Colombia, to Nestor Humberto Martinez Neira, Minister of Justice and Law, Republic of Colombia, p. 1 (20 Dec. 1994). ER, Vol. V, Annex 123.

[770] Republic of Colombia, Office of the Ombudsman, Meeting Minutes, p. 1 (17 Feb. 1995). ER, Vol. V, Annex 124.

"causing impacts to substitution crops, food crops, bodies of water and tropical forests, including conservation areas and parks which have been declared natural reserves", and that the "fumigation techniques ha[d] yet to be assessed"[771].

4.24 In October 1995, the Environment Ministry ordered the DNE within two months to design a field study to evaluate the environmental impact of aerial spraying of a glyphosate-based herbicide, with guidance from the ICA and the Ministry of Environment[772]. Rather than comply with this order, the DNE appealed it[773]. When the appeal was rejected in December 1995[774], the DNE appealed again. That appeal was denied as well[775].

4.25 In August 1996, the Environment Ministry issued a categorical rejection of the DNE's submission, declaring that it was plagued by "*deficiencies and*

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[771] *Ibid.*, p. 2 (17 Feb. 1995). The official's reached other equally negative conclusions, including that "[t]he dosage and frequency of the glyphosate application has not been prior approved by the ICA"; that "[t]he Anti-narcotics Police, in accordance with orders received from the National Narcotics Council, decides the areas that are fumigated which it determines at the same moment that the operation is conducted, in other words, without prior evaluation . . . which makes it impossible to determine the affected areas with any precision"; and that "[t]he techniques for direct fumigation have yet to be evaluated".

[772] Republic of Colombia, Ministry of Environment, Legal Department, *Order No. 558A*, p. 2 (13 Aug. 1996). ER, Vol. V, Annex 126.

[773] *Ibid.*

[774] Republic of Colombia, Ministry of Environment, Legal Department, *Order No. 558A*, p. 2 (13 Aug. 1996). ER, Vol. V, Annex 126.

[775] Republic of Colombia, Ministry of Environment, Legal Department, *Order No. 557A*, p. 2 (13 Aug. 1996). ER, Vol. V, Annex 127.

technical and logistical flaws"[776]. Not least of these deficiencies were the technical assessments that underpinned the use of Turbo Thrush airplanes and the high concentration of glyphosate, which the Ministry said were "*unreliable*"[777]. As a result, the Ministry of Environment ordered the DNE to carry out "studies and evaluations [] that permit re-evaluating and determining the parameters and technical specifications for the fumigations". This was necessary, the Ministry said, to "prevent harm or danger to renewable natural resources and to human health"[778]. Given the DNE's continuing inaction, the Ministry promulgated Terms of Reference that included the required field study within a more complete set of specific environmental assessment obligations[779].

4.26 The Terms of Reference included, *inter alia*, the need to "[i]dentify the negative impacts that the Program could cause in the different environmental, physical-biological and socio-economic components"[780]. They also included the obligation to "[i]ndicate the information deficiencies that generate uncertainty in

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[776] Republic of Colombia, Ministry of Environment, Legal Department, *Order No. 558A*, p. 1 (13 Aug. 1996) (emphasis added). ER, Vol. V, Annex 126.

[777] *Ibid.* (emphasis added).

[778] *Ibid.*

[779] *Ibid*, p. 2. Two inter-institutional meetings were held, in May and June 1996, to develop the terms of reference for the EMP. The DNE – an invited and critical participant in this Plan – notably did not participate in the second meeting finalizing the EMP's terms. *See* Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 2 (23 Dec. 1999). ER, Vol. V, Annex 132.

[780] Republic of Colombia, Ministry of Environment, Legal Department, *Order No. 558A*, p. 5 (13 Aug. 1996). ER, Vol. V, Annex 126.

the estimation, scale and evaluation of the impacts"[781]. In addition, the Ministry of Environment required the DNE to include in the EMP a chapter devoted to the "Identification and Evaluation of Impacts", which had to provide an "evaluation and ranking of temporary or permanent impacts produced by the *Program* . . . "[782]. Further, the Ministry ordered the DNE to compare an unsprayed area with areas that were sprayed. Among the subjects that had to be evaluated were the risks to human health, animal species, the ecosystems, and air, soil and water quality[783]. In assessing these risks the study had to evaluate:

- "Potential toxic or adverse effects that may result from herbicides, metabolites, or the products resulting from their transformation
- Physical and chemical properties of the herbicides associated with their distribution, mobility, and persistence in various environmental compartments
- Environmental characteristics (physical-biotic and socio-economic aspects) of the exposed areas
- Conditions of exposure, type of exposure (direct or indirect), concentration, duration, and routes of exposure
- In all cases, there will be a description of the methodology used for evaluating impacts, as well as for establishing the parameters and criteria for scoring and ranking them, including the following considerations:
    - The nature and magnitude of the negative effect
    - The probability of occurrence
    - Resources affected and ecological significance of the effect
    - Reversibility

[781] *Ibid.*

[782] *Ibid.*, p. 15 (emphasis in original).

[783] *Ibid.*

- The impact's area of influence
- Lack of information causing any uncertainty or limiting the scope of the evaluation"[784].

The Ministry also ordered that the evaluation analyze both "unavoidable" and "cumulative" impacts[785]. The Ministry expressly ordered the DNE to consider risks to human health and the territory of indigenous peoples, as well as environmental harm generally[786].

4.27 Nearly two years elapsed after the Environment Ministry issued these Terms of Reference, but the DNE did not comply. As a result, the Ministry was compelled to repeat its order for the DNE to submit the required documentation[787]. The Ministry could not have been clearer that the DNE's failure to present these materials breached its legal obligations; it declared that "*the DNE could not continue evading what the Constitution and the law required of it*"[788]. The Ministry therefore warned that unless the situation was remedied, it would be required to take "other action"[789].

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[784] Republic of Colombia, Ministry of Environment, Legal Department, *Order No. 558A*, pp. 15-16 (13 Aug. 1996). ER, Vol. V, Annex 126.

[785] *Ibid.*, pp. 18-19.

[786] *Ibid.*, p. 17.

[787] Republic of Colombia, Ministry of Environment, Division of Licenses, *Technical Report No. 419.99*, p. 4 (21 Dec. 1999). ER, Vol. V, Annex 131.

[788] *Ibid.* (emphasis added).

[789] *Ibid.*

4.28 When the DNE finally submitted a response, the Environment Ministry promptly rejected it. And for good reason. The DNE's submission was missing the entire Chapter that was supposed to present the "Identification and Evaluation of Environmental Impacts"[790].

4.29 In light of the DNE's failure to carry out the required impact assessments, the Environment Ministry repeatedly reiterated its demand for them[791]. When the full report finally arrived, the Ministry again rejected it[792].

4.30 The *Counter-Memorial*'s reticence about the DNE's foot-dragging in regard to EIA is not surprising, in light of the criticisms that Colombia's own government agencies levelled against it. These criticisms, which are set forth in a document dated 23 December 1999 – just days before Colombia began to spray along the border with Ecuador in January 2000 – further confirm that the environmental impacts of the aerial spraying had not been evaluated prior to the

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[790] Letter from Guillermo Acevedo Mantilla, Subdirector of Environmental Licenses, Ministry of Environment, Republic of Colombia, to Ruben Olarte Reyes, Director, National Drug Directorate, Republic of Colombia (13 Nov. 1998). ER, Vol. V, Annex 130.

[791] Letter from Guillermo Acevedo Mantilla, Subdirector of Environmental Licenses, Ministry of Environment, Republic of Colombia, to Ivon Alcala Arevalo, Director, National Drug Directorate, Republic of Colombia (8 Oct. 1998). ER, Vol. V, Annex 129; Letter from Guillermo Acevedo Mantilla, Subdirector of Environmental Licenses, Ministry of Environment, Republic of Colombia, to Ruben Olarte Reyes, Director, National Drug Directorate, Republic of Colombia (13 Nov. 1998). ER, Vol. V, Annex 130.

[792] Republic of Colombia, Ministry of Environment, Division of Licenses, *Technical Report No. 419.99*, p. 4 (21 Dec. 1999). ER, Vol. V, Annex 131; Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, pp. 31-33 (23 Dec. 1999). ER, Vol. V, Annex 132. *See also* Colombian Ministry of Environment, Resolution No. 341 of 2001, p. 2. EM, Vol. II, Annex 14.

spraying of areas immediately adjacent to Ecuador[793]. Indeed, it is not just that no prior EIA was carried out; the evidence is that the DNE *refused* to do it.

4.31 Among the government agencies critical of the DNE for its refusal to conduct impact studies was the Colombian Agriculture Institute ("ICA") – an agency under the jurisdiction of the Ministry of Agriculture. Its criticisms included the following:

- The ICA rejected the DNE's assertion that the equipment and spray mixture used in the programme "guarantee[d] that the ecosystem will not suffer any damage"[794]. In particular, the ICA stated that the DNE had never evaluated spraying with fixed-wing aircraft, but instead had only assessed spraying with helicopters, which do not fly nearly as high or fast, "despite the fact that applications [we]re being carried out via airplane"[795]. The ICA further stated that the relevant "technical concepts" had "not been taken into account"[796].

- The ICA disputed the DNE's assertion that it had decided which territories to spray in coordination with the ICA. Specifically, it stated

[793] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599* (23 Dec. 1999). ER, Vol. V, Annex 132.

[794] *Ibid.*, p. 11.

[795] *Ibid.*

[796] *Ibid.*

that after the initiation of the spraying programme the ICA had "never again" been involved[797]. Nor, the ICA said, was it aware of any of the recent inter-institutional "assessment meetings" that the DNE claimed had taken place during which the programme was reassessed[798]. To the contrary, the ICA stated that the last meetings of which it was aware had taken placed 15 years earlier, in 1984[799]. The experts convened at those earlier meetings, which Ecuador described in the *Memorial*, had decided against aerial spraying, stating: "[T]he Committee reiterates its opposition of not recommending the use of glyphosate or any other herbicide by aerial application for the destruction of marijuana crops . . . the implementation of the program is advised against because it would be accepting experimentation on humans"[800].

- The ICA found serious flaws in the DNE's discussion of nearly every operational parameter relevant to spray drift, including height, speed and application rate[801]. It therefore rejected the DNE's assertion that spray drift would be limited to 2 to 5 metres. In particular, the ICA declared

[797] *Ibid.*

[798] *Ibid*, p. 12.

[799] *Ibid.*

[800] *See* Memorial of Ecuador, Chap. 2, para. 2.34 (28 Apr. 2009) (hereinafter "EM").

[801] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, pp. 12-14 (23 Dec. 1999). ER, Vol. V, Annex 132.

that "*the height and speed of operation*" made that level of drift "*impossible to achieve with airplanes*"[802].

- The ICA determined that much more information was needed to identify the impacts caused by spray drift and to understand its implications for the environment and human health. The ICA explained that, given the toxicity of the spray mixture and the lack of information on its potential impact, the Ministry of Environment should require assessments to evaluate the spray's impact in Colombia's "environment"[803].

4.32 The Ministry of Environment was particularly critical of the DNE's failure to take impact assessments seriously. Its Ecosystems Department wrote that the insufficient level of detail provided in the DNE's environmental characterization of the areas to be assessed made it "impossible to carry out evaluations or rankings of the temporary and permanent impacts caused by the eradication efforts, and therefore, to define the control, prevention, compensation and recuperation measures for the EMP"[804]. The lack of specificity in the plan meant that there was:

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[802] The ICA observed that the DNE would be more likely to achieve that level of drift if it used helicopters. *Ibid.*, p. 14 (emphasis added).

[803] *Ibid.*, p. 16.

[804] *Ibid.*, 19.

> "no accuracy regarding the critical and risk areas corresponding to the different degrees of erosion and geotechnical stability, the inventory of the primary uses of water related to municipal aqueduct supply, fields and production activities, and specific characterizations regarding qualitative and quantitative vegetative aspects, the presence of endemic flora and fauna species in areas of direct influence within eradication areas, basic parameters of impact identification and evaluation"[805].

In other words, there was no way to determine the type and extent of harm that could be caused and would need to be assessed in the areas to be sprayed.

4.33 The Subdivision for the Planning and Management of National Parks of the Special Administrative Unit for National Parks was equally critical. It stated that the DNE had not evaluated the vulnerabilities of the ecosystems exposed to the spray, had failed to evaluate the impacts caused by the sprayings, had failed to secure the required approval from the Ministry of Environment for areas to be studied, and had failed to address the legal requirement to establish buffer zones around sensitive areas, such as national parks[806].

4.34 As was to be expected, the DNE challenged this order in an administrative appeal[807].

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[805] *Ibid.*, pp. 19-20.

[806] *Ibid.*, pp. 21-24.

[807] Colombian Ministry of Environment, Resolution No. 341 of 2001, p. 2. EM, Vol. II, Annex 14.

4.35 Thus, the state-of-affairs with respect to environmental impact assessment as of 23 December 1999 – that is, just before aerial spraying along the border with Ecuador began in January 2000 – was as follows: The only study that Colombia felt was worth mentioning in the *Counter-Memorial*'s section on "Studies Leading to the Environmental Management Plan" had occurred over a decade earlier, in 1987, and was totally inadequate; and the Colombian Environment Ministry had repeatedly demanded impact studies for many years, but was refused at every turn by the DNE.

Section II. Colombia's Failure to Assess Environmental Impacts After the Aerial Spraying Programme Commenced

A. THE STUDIES INVOKED IN THE *COUNTER-MEMORIAL*

4.36 The first study mentioned in the *Counter-Memorial* that allegedly assessed the impacts of the aerial spraying programme is the Solomon study, which was not completed until March 2005[808]. Colombia thus concedes that between January 2000 (when spraying near Ecuador began) and March 2005 (when the Solomon study was completed), there were no assessments that qualify as an EIA[809]. As a result, the *Counter-Memorial* does not contest that, for over five years, Colombia sprayed vast quantities of chemical herbicides in areas immediately adjacent to Ecuador without having assessed environmental impacts,

[808] CCM, Chap. 4, paras. 4.15-4.17.

[809] *See* CCM, Chap. 4, 4.8-4.17.

let alone transboundary impacts. Indeed, by the time the Solomon study was completed in March 2005, Colombia had sprayed within 10 kilometres of Ecuador no fewer than 64,285 times[810].

4.37 The 2005 Solomon study did not purport to be a transboundary EIA. It was a report conducted at the request of the Governments of the United States, the United Kingdom and Colombia[811]. By its own terms, it was confined to assessing impacts in Colombia exclusively[812]. Moreover, the value of this or any other scientific study necessarily depends on the quality of the data or assumptions upon which it is based. In this case, the Solomon study was based on factual representations given by Colombia – that the spray planes strictly complied with all operational requirements regarding flight speed, altitude, application rate, droplet size, and time of day – representations which the evidence described in Chapter 2 of this *Reply* now shows were false. Accordingly, contrary to the *Counter-Memorial*, the 2005 Solomon study is not

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[810] R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008*, Appendix 3, p. 29 (Jan. 2011) (hereinafter "Hansman & Mena Report"). ER, Vol. II, Annex 1.

[811] Keith R. Solomon et al., *Environmental and Human Health Assessment of the Aerial Spray program for Coca and Poppy Control in Colombia*, p. 2 (31 Mar. 2005) ("This report was prepared . . . in response to requests from the Governments of Colombia, the United Kingdom, and the United States of America".) (hereinafter "Solomon et al., 2005"). CCM, Vol. III, Annex 116. *See also* 2004 Memorandum of Understanding between the Government of Colombia and the Organization of American States (OAS) for the execution of the study on the effects of the Program for the Eradication of Illicit Crops by aerial spraying with Glyphosate Herbicide (PECIG) and of illicit crops, on human health and environment, pp. 8-9 (4 Feb. 2004). CCM, Vol. III, Annex 113.

[812] *Ibid*, p. 9.

only *not* an EIA, but it is also devoid of any sustainable findings about the environmental impacts of the aerial spraying programme in either Colombia or Ecuador. It certainly has nothing useful to say about spray drift – into Ecuador or anywhere else[813].

4.38 Further undermining the reliability of the 2005 Solomon study, it did not purport to assess the impacts of spray mixtures that Colombia *actually used*. As described in Chapter 2, at least four different formulations have been reported: Roundup Export, Roundup Ultra, Roundup SL and GLY-41[814]. The Solomon study does not state that any of these products were evaluated. All the study says is that its authors received a toxicity assessment that had been conducted three years earlier by a Colombian laboratory of a "sample product GLYPHOSATE 44% + COSMOFLUX 1% + WATER 55%"[815]. If the report of the Colombian

[813] For example, the Solomon study assumed that the spray droplets were 300-1,500 µm in diameter. Solomon et al., 2005, *op. cit*., p. 28. CCM, Vol. III, Annex 116. Nevertheless, later research by the same research team revealed that at least 50 percent of the droplets were less than 128 µm in size. A.J. Hewitt et al., "Spray Droplet Size, Drift Potential, and Risks to Nontarget Organisms from Aerially Applied Glyphosate for Coca Control in Colombia" in *Journal of Toxicology and Environmental Health*, Part A, 72:921, p. 921 (2009) (hereinafter "Hewitt et al., 2009"). CCM, Vol. III, Annex 131-B. As discussed in Chapter 2, droplet size is one of the most critical parameters influencing spray drift, and this drastic overestimation of the size of the droplets would materially affect any conclusions regarding impacts caused by spray drift. In addition, the Solomon study assumed that the spray was released from a height of 30 meters. Solomon et al., 2005, *op. cit*., p. 30. CCM, Vol. III, Annex 116. Again, Solomon's assumptions were far off the mark, invalidating any of its conclusions regarding the health and environmental impacts of spray drift.

[814] *See supra* Chap. 2, paras. 2.18-2.42.

[815] O. Saavedra, Laboratorio Immunopharmos Ltda., *Toxicity Study on Laboratory Animals for two concentrations of Glyphosate 44% + Cosmoflux 1% + Water 55%*, Bogotá, p. 281 (15 Feb. 2002). CCM, Vol. III, Annex 128; Solomon et al., 2005, *op. cit*., pp. 104-105. CCM, Vol. III, Annex 116.

laboratory is taken at face value, no *formulated* version of glyphosate was assessed, since it refers only to "Glyphosate", thus indicating that glyphosate in its pure form was tested, not a formulated product such as Roundup Export or GLY-41 that contains surfactants like POEA (which the *Counter-Memorial* admits is present in all formulations that have been sprayed)[816]. Regardless, since only one mixture was assessed, at least three of the four products that Colombia has sprayed were not studied.

4.39 The 2005 Solomon study identified numerous topics relating to environmental risk and protection of human health that it did not address, even though it stressed their importance. Colombia's own expert acknowledges that the "Solomon et al. report identified data gaps and areas with insufficient information to conclude a risk assessment satisfactorily and outlined a further programme of research to fill these gaps" [817]. Chief among these was the absence of any proper study of spray drift, since it had "not been measured under conditions of use in Colombia"[818]. Since spray drift is the principal means by

[816] CCM, para. 4.50, n. 312.

[817] Dr. Stuart Dobson, Critique of "Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador" Menzie et al., p. 528 (2009) (hereinafter "Dobson Report"). CCM, Vol. I, Appendix.

[818] 2006 Memorandum of Understanding between the General Secretariat of the Organization of American States (SG/OAS) and the Government of Colombia for the execution of the study on the effects of the Program for the Eradication of Illicit Crops by aerial spraying with Glyphosate Herbicide (PECIG) on human health and the environment, p. 228 (23 May 2006). CCM, Vol. III, Annex 119. Inter-American Drug Abuse Control Commission (CICAD), *Second Phase Environmental and Human Health Assessment of the Aerial Spray Program for Coca and Poppy Control in Colombia*, p. 1 (date unknown). EM, Vol. III, Annex 159.

which Ecuador has been affected by the aerial spraying programme, the study's failure to assess drift confirms that Colombia failed to evaluate the programme's transboundary impacts, even as late as five years into it. Even the *Counter-Memorial* concedes that the 2005 study left numerous "remaining uncertainties" that were "identified as subjects for further study"[819]. These included, according to Colombia, "the issues of spray drift, the effects on sensitive wildlife such as amphibians and the effects on humans"[820]. For example, although spraying had been ongoing for over five years near Ecuador, the impact on amphibians (which are particularly sensitive to herbicides) had not been assessed as of 2005. In that regard, even as late as 2009, the authors of the study could state that "there was no data on the susceptibility of amphibians" to the spray used in the eradication programme[821]. The Solomon Study also observed that the spray's impact on human health in important respects had not been adequately studied, including with respect to reproductive health[822].

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[819] CCM, Chap. 7, para. 7.12.

[820] *Ibid.*

[821] K.R. Solomon et al., "Human Health and Environmental Risks from the Use of Glyphosate Formulations to Control the Production of Coca in Colombia: Overview and Conclusions", in *Journal of Toxicology and Environmental Health*, Part A 72:914-920, p. 915 (2009) (hereinafter "Solomon et al., 2009"). CCM, Vol. III, Annex 131-A. *See also* Memorandum of Understanding between the General Secretariat of the Organization of American States (SG/OAS) and the Government of Colombia for the execution of the study on the effects of the Program for the Eradication of Illicit Crops by aerial spraying with Glyphosate Herbicide (PECIG) on human health and the environment, pp. 228-229 (23 May 2006). CCM, Vol. III, Annex 119.

[822] *Ibid*, pp. 914, 917-919. *See also* Memorandum of Understanding between the General Secretariat of the Organization of American States (SG/OAS) and the Government of Colombia for the execution of the study on the effects of the Program for the Eradication of Illicit Crops by

4.40 Ecuador submits that a document that fails to assess these matters cannot be deemed an adequate impact assessment, especially in a transboundary context.

4.41 The authors of the 2005 Solomon study emphasized the need for studies of spray drift. They proposed a specific study, to be completed by 2007, which was an aerial application "field experiment" to be conducted "under conditions in Colombia to determine spray drift"[823]. The contemplated study was described as follows:

> "Three non-overlapping spray swaths will be sprayed and spray targets (water-sensitive paper and filter papers for dye catching) set out in transects so that a spatial representation of deposition can be mapped. Test plants of pot-grown maize will also be placed with targets to evaluate the biological impact of drift outside the garget area. Applications can be repeated for four wind speeds (1, 2, 4, and 8 knots). A comparison of predictions with EPA drift models will evaluate the accuracy of risk predictions from drift events. Different spray heights will be used as well (30, 50, and 70 m)"[824].

4.42 The *Counter-Memorial* made no mention of this study or its results. The Court is thus left with two possibilities: either the study was never conducted,

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aerial spraying with Glyphosate Herbicide (PECIG) on human health and the environment, p. 230 (23 May 2006). CCM, Vol. III, Annex 119.

[823] Memorandum of Understanding between the General Secretariat of the Organization of American States (SG/OAS) and the Government of Colombia for the execution of the study on the effects of the Program for the Eradication of Illicit Crops by aerial spraying with Glyphosate Herbicide (PECIG) on human health and the environment, p. 230 (23 May 2006). CCM, Vol. III, Annex 119.

[824] Inter-American Drug Abuse Control Commission (CICAD), Second Phase Environmental and Human Health Assessment of the Aerial Spray Program for Coca and Poppy Control in Colombia, p. 4 (date unknown). EM, Vol. III, Annex 159.

despite the recommendation by the authors of the 2005 Solomon study, or Colombia has chosen not to present the results.

4.43 The authors of the 2005 study also proposed a "wind tunnel" study "to characterize the spray droplet spectrum for the nozzles and speed of spraying in Colombia"[825]. This study was carried out by Dr. Andrew Hewitt as part of a group of studies conducted in collaboration with Dr. Solomon, but not until 2009, that is, nine years after spraying began near the border and two years after Ecuador submitted its *Application* to the Court[826]. It was paid for by the Governments of Colombia and the United States[827].

4.44 The main deficiency in the 2009 Hewitt *et al*. study – indeed, its fatal flaw – was already identified in paragraphs 2.191 and 4.7: its predictions of spray drift and toxicity levels at various distances from the target depended on *accurate* data regarding spray plane flight speed and altitude of dispersion, among other

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[825] Memorandum of Understanding between the General Secretariat of the Organization of American States (SG/OAS) and the Government of Colombia for the execution of the study on the effects of the Program for the Eradication of Illicit Crops by aerial spraying with Glyphosate Herbicide (PECIG) on human health and the environment, p. 230 (23 May 2006). CCM, Vol. III, Annex 119.

[826] Hewitt et al., 2009. CCM, Vol. III, Annex 131-B. The Hewitt et. al. (2009) study was part of a group of studies conducted by the Solomon et al. team, and published in 2009. *See* CCM, Vol. III, Annexes 131-A to 131-I.

[827] *See* page one of CCM Annexes 131-A through 131-I ("This paper was prepared as part of a Study entitled 'Production of Illicit Drugs, the Environment and Human Health,' financed with contributions from the Governments of Colombia and the United States of America. The conclusions and opinions expressed herein are those of the authors and not necessarily those of the Organization of American States and its General Secretariat, which as of the date of this copyright, have not formulated any opinion with respect to them".).

important parameters; but the "data" provided by Colombia were far from accurate. In fact, Colombia apparently provided *no data* to the experts it contracted to perform the study; there is no indication in the reports that Hewitt *et al.* received or reviewed any actual spray flight data, even though it had been automatically generated by each of thousands of spray flights between 2000 and 2009. Instead, the experts made the assumption (or were instructed by Colombia) that the spray flights rigorously observed the operational requirements mandated by the EMP in regard to these parameters, and these are the numbers they fed into their model – even though, as shown in Chapter 2, *supra,* they bear no relation to reality. Thus, the 2009 Hewitt *et al*. study was predicated upon assumptions that do not reflect the actual spray programme and the conclusions it reached based on these assumptions have no validity.

4.45 The set of Solomon *et al*. studies from 2009 also lacks merit because, like Solomon 2005, they purported to measure the properties, including toxicity levels at various distances of drift, of a substance other than the one Colombia actually sprays (or sprayed). The *Counter-Memorial* fails to mention that the only product Solomon *et al.* evaluated in 2009 was a chemical called "*Glyphos*"[828]. This name

[828] Solomon et al., 2009, *op. cit*., pp. 915, 916. CCM, Vol. III, Annex 131-A; Hewitt et al., 2009, *op. cit.*, pp. 921, 922. CCM, Vol. III, Annex 131-B; E.J.P. Marshall et al., "Coca (*Erythroxylum coca*) Control is Affected by Glyphosate Formulations and Adjuvants", in *Journal of Toxicology and Environmental Health*, Part A 72:930-936, p. 930 (2009). CCM Annex 131-C; R.A. Brain et al., "Comparison of the Hazards Posed to Amphibians by the Glyphosate Spray Control Program versus the Chemical and Physical Activities of Coca Production in Colombia", in *Journal of Toxicology and Environmental Health*, Part A 72:937-948, p. 937 (2009). CCM, Vol. III, Annex

does not match any of the products that the *Counter-Memorial* says have been sprayed (Roundup SL and GLY-41); nor does it correspond to the product mentioned in the U.S. government records (Roundup Export), or to the formulation that Colombia referenced in diplomatic exchanges with Ecuador (Roundup Ultra)[829]. Thus, it does not appear that the study addressed *any* of the relevant spray mixtures used along the border with Ecuador.

4.46 The *Counter-Memorial* informs the Court that Solomon *et al*. 2009 evaluated impacts on amphibians[830]. However, even the experts' unrealistically low estimate of the spray's "normal application" rate resulted in *30-35% mortality* for three species[831]. That is a disturbing result for an herbicide that is

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131-D; M.H. Bernal et al., "Toxicity of Formulated Glyphosate (Glyphos) and Cosmo-Flux to Larval and Juvenile Colombian Frogs 1. Field and Laboratory Microcosm Acute Toxicity", in *Journal of Toxicology and Environmental Health*, Part A, 72:961-964, p. 961 (2009). CCM, Vol. III, Annex 131-F; M.H. Bernal et al., "Toxicity of Formulated Glyphosate (Glyphos) and Cosmo-Flux to Larval and Juvenile Colombian Frogs 2. Field and Laboratory Microcosm Acute Toxicity", in *Journal of Toxicology and Environmental Health*, Part A, 72:966-973, p. 966 (2009). CCM Annex 131-G; C. Bolognesi et al., "Biomonitoring of Genotoxic Risk in Agricultural Workers from Five Colombian Regions: Association to Occupational Exposure to Glyphosate", in *Journal of Toxicology and Environmental Health*, Part A 72:986-997, p. 988 (2009). CCM, Vol. III, Annex 131-I. Dr. Dobson asserted that GLY-41 is Glyphos ("Glyphos as Gly41"), but provided no basis for that assertion. Dobson Report, *op. cit.*, p. 521. CCM, Vol. I, Appendix.

[829] *See supra* Chap. 2, paras. 2.18-2.42.

[830] CCM, Chaps. 3 and 7, paras. 3.56, 7.12, 7.21, 7.76.

[831] M.H. Bernal et al., "Toxicity of Formulated Glyphosate (Glyphos) and Cosmo-Flux to Larval and Juvenile Colombian Frogs 2. Field and Laboratory Microcosm Acute Toxicity", in *Journal of Toxicology and Environmental Health*, Part A, 72:966-973, p. 971, Table 3 (2009). CCM, Vol. III, Annex 131-G. *See also* Charles A. Menzie, Ph.D. & Pieter N. Booth, M.S., *Response to: "Critique of Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador," As Presented in: Counter-Memorial of the Republic of Colombia, Appendix*, pp. 19-23 (Jan. 2011) (describing the deficiencies of the Solomon et al. and Dobson studies on amphibians). ER, Vol. II, Annex 6.

indiscriminately applied to the home of some of the earth's most unique, concentrated, and vulnerable amphibian populations[832]. Also troubling is the fact that other spray mixtures were considered less toxic to aquatic life[833]. In other words, Colombia sprayed for almost a decade near the border – discharging hundreds of thousands of gallons of a formulated herbicide mixture within 10 kilometres of Ecuador in 114,525 different aerial spraying events[834] – before considering which substances would be the least harmful to animal-life, and when a study finally evaluated that issue, Colombia disregarded the answer.

4.47 In sum, the evidence presented in the *Counter-Memorial* to support Colombia's claim to have discharged its EIA obligations, or to have assured itself that its aerial spraying programme did not affect Ecuador, falls far short of the mark. Neither of the two Solomon studies cited in the *Counter-Memorial* – both of which occurred long after the spray programme commenced near Ecuador – can be characterized as an EIA. Neither addressed risks to Ecuador, and both relied upon grossly inaccurate data in regard to evaluation of spray drift.

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[832] *See* EM, Chap. 2, paras. 2.13-2.14. Henrik Balslev, Ph.D., *The Vulnerability of the Ecuador-Colombia Border Region to Ecological Harm*, pp. 15, 19, 20, 21, 34, 37, 44 (Jan. 2011) ("Ecuador is ranked third in amphibian diversity worldwide with 415 described species . Only Brazil and Colombia have more species than Ecuador. . . . Amphibians may serve as indicators of more extensive environmental change because they are sensitive to environmental contamination and live in both aquatic and terrestrial environments".). ER, Vol. II, Annex 4.

[833] E.J.P. Marshall et al., "Coca (*Erythroxylum coca*) Control is Affected by Glyphosate Formulations and Adjuvants", in *Journal of Toxicology and Environmental Health*, Part A 72:930-936, p. 930 (2009). CCM Annex 131-C.

[834] R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008*, pp. 1, 2, 11 (Jan. 2011). ER, Vol. II, Annex 1.

B. THE COLOMBIAN ENVIRONMENT MINISTRY'S ONGOING FAILURE TO SECURE AN EIA

4.48 As shown above, Colombia's Environment Ministry tried, but failed, to get the executing agency, the DNE, to carry out environmental impact studies for the aerial spraying programme prior to the first known spray flights along the border with Ecuador in 2000. The evidence shows that the Environment Ministry continued its effort to have the environmental impacts of the programme assessed through 2003, with the same effect: total failure. The *Counter-Memorial* mentions none of this, or that not only the Environment Ministry, but also the Comptroller General and the National Ombudsman repeatedly demanded impact studies from DNE during this period, but were completely rebuffed. In fact, the Environment Ministry even *fined* the DNE for failing to present the required impact assessments[835].

4.49 In March 2000, two months into the aerial spraying programme in the border region, the Environment Ministry issued an order that:

- Required the DNE to carry out an analysis of the aerial spraying's environmental impacts over time. The Ministry reiterated that in order to assess potential impacts, it was "necessary to correctly identify the negative impacts on different environmental, physical-biotic and socio-

[835] *See* Republic of Colombia, Ministry of Environment, *Resolution 0670, Whereby a sanction is imposed and other decisions are made*, p. 13 (19 Jun. 2003). ER, Vol. V, Annex 148. *See also* Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

economic components"[836]. The Ministry further explained that the DNE could not fulfil this obligation by relying, as it had, on secondary international literature[837].

- Ordered the DNE to conduct studies regarding the spray's impacts on soil and animal species, including aquatic organisms. The Ministry specified that the DNE's responses to date had merely "open[ed] a range of information gaps regarding the effects of the glyphosate used in the doses and spray conditions of the Illegal Crop Eradication Program."[838].

- Required the DNE to explain whether the technical parameters established for the spray operations had taken into consideration the use of Cosmo Flux 411F[839].

- Required the DNE to consider measures to address potential harm to territories bordering national parks, rather than merely stating the special measures taken *within* national parks[840].

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[836] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 143*, pp. 26, 31 (29 Mar. 2000). ER, Vol. V, Annex 133.

[837] *Ibid.*, pp. 27.

[838] *Ibid.*, pp. 29, 31.

[839] *Ibid.*, pp. 26, 31.

4.50 The Environment Ministry ordered the DNE to produce these impact studies within three months[841]. The DNE appealed and requested a one-year delay. The appeal was denied[842]. But, still nothing changed. In August 2000, the Colombian National Narcotics Council ordered changes to the aerial spraying programme because of the need to address complaints of "damages" to "the people, the environment, and agricultural and livestock activities" by "spraying with glyphosate"[843]. It acknowledged, in that regard, the need "to strengthen effective control, follow-up, and monitoring mechanisms that make it possible to evaluate environmental, agronomic, and health impacts generated by the illicit crops eradication program"[844]. Specifically, the Council required the Colombian National Police and the DNE to assess risks to human health, the environment, agriculture and livestock in the targeted areas[845]. It directed these agencies to obtain and analyze local information on the "environmental context" of areas considered for aerial spraying to "determin[e] potential risk for human health, the

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[840] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 143*, pp. 25, 30 (29 Mar. 2000). ER, Vol. V, Annex 133.

[841] *Ibid.*, p. 31 (29 Mar. 2000).

[842] *See* Colombian Ministry of Environment, Resolution No. 341 of 2001, p. 2. EM, Vol. II, Annex 14. *See also*, Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

[843] Resolution No. 005 of 11 August 2000 of the National Narcotics Council of Colombia, p. 118. CCM, Vol. II, Annex 41.

[844] *Ibid. See also* Rojas Report, *op. cit.*, paras. 54-56. ER, Vol. II, Annex 8.

[845] Resolution No. 005 of 11 August 2000 of the National Narcotics Council of Colombia, p. 119. CCM, Vol. II, Annex 41. The resolution also stated, in the only section that Colombia did not translate in its annex, that the spray operations had been required to comply with several environmental and health protection measures since as early as 1986. It also reiterated the requirement, dating back to 1991, that the Health Ministry carry out epidemiological monitoring plans and implement sanitary controls for use of the herbicide. Republic of Colombia, National Narcotics Council, *Resolution No. 005*, pp. 26-27 (11 Aug. 2000). ER, Vol. V, Annex 135.

environment, and agriculture and livestock" for those areas selected "for aerial spraying with glyphosate"[846]. The Council also ordered the DNE to hire an external technical auditor to carry out an "assessment on impacts on the environment, human health, and on agricultural activities"[847]. Although the *Counter-Memorial* briefly refers to the retention of an auditor to ensure that the spray mixture "conforms with the relevant regulations as to permitted composition and dosage under Colombian law"[848], it neglects to say that the DNE was also required to contract for an audit of whether operations are carried out as required by law and to analyze impacts on the environment, human health and agricultural activities[849].

4.51 Regardless, the DNE again failed to comply. The Environment Ministry concluded in September 2000 that "DNE has not undertaken in any of the submitted documents, a technical or methodological assessment of impact identification"[850] or of environmental risks. It further found that the DNE's

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[846] Resolution No. 005 of 11 August 2000 of the National Narcotics Council of Colombia, p. 119. CCM, Vol. II, Annex 41. *See also* Rojas Report, *op. cit.*, para. 55. ER, Vol. II, Annex 8.

[847] Resolution No. 005 of 11 August 2000 of the National Narcotics Council of Colombia, p. 122. CCM, Vol. II, Annex 41.

[848] CCM, Chap. 6, para. 6.20.

[849] The Ministry of Environment also pointed out the DNE's attempt to substitute the terms and function of the external audit in Resolution 670 of 2003, sanctioning the DNE for its continuing EMP violations. Republic of Colombia, Ministry of Environment, *Resolution 0670, Whereby a sanction is imposed and other decisions are made*, p. 6 (19 June 2003). ER, Vol. V, Annex 148.

[850] Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Technical Report, No. 589,Evaluation of the Additional Information Provided by the National Narcotics Directorate*, p. 9 (20 Dec. 2000). ER, Vol. V, Annex 136. *See also*, Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

response was "not environmentally viable . . . due to the uncertainty regarding [the programme's] potential environmental impacts"[851].

4.52 In December 2000, the Environment Ministry, having had all of its prior requests for impact studies frustrated, demanded that representatives of the DNE appear before it. At the ensuing meeting, the Ministry again informed the DNE that the information it had provided, and its level of cooperation more generally, "did not satisfy the [Ministry's] requirements"[852]. The *Counter-Memorial* fails to mention this meeting or its aftermath, but it is clear from statements by the Colombian National Ombudsman that the DNE continued to stonewall on EIA[853].

4.53 When the DNE submitted a new response, the Ministry of Environment was again compelled to reject it in May 2001[854]. The reason: none of the 10 topics it addressed evaluated environmental risks[855]. Specifically, the Ministry declared:

> "The analysis to determine which areas are environmentally affected by the eradication program is not supported from a technical or scientific point of view. It contains neither qualitative

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[851] *Ibid.*, pp. 13-14.

[852] Colombian Ministry of Environment, Resolution No. 341 of 2001, p. 3. EM, Vol. II, Annex 14.

[853] Republic of Colombia, Office of Ombudsman, *The Implementation of the Strategy of Aerial Eradication of Illicit Crops With Chemicals, From a Constitutional Perspective*, p. 34 (Apr. 2003). ER, Vol. V, Annex 146.

[854] Colombian Ministry of Environment, Resolution No. 341 of 2001, p. 9. EM, Vol. II, Annex 14. *See also* Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

[855] Colombian Ministry of Environment, Resolution No. 341 of 2001, p. 3 *et seq*. EM, Vol. II, Annex 14.

> nor quantitative supporting information, nor any supporting research on programs related to the purpose of the evaluation that could allow a determination and evaluation of the impacts caused to natural resources by the application of Glyphosate. Therefore, the risk assessment is in a very general form, which does not allow for a detailing or specification of actions to determine risks and to plan for their management in advance"[856].

4.54 In light of this critique, the Ministry "concluded" that the "documents that have so far been submitted" by the DNE did not satisfy "the scope and objectives defined in the terms of reference, nor the informational requirements that this Ministry has repeatedly requested from the National Narcotics Directorate (DNE)"[857]. In making this determination, the Environment Ministry made the following specific criticisms:

- There was "no presentation of an evaluation of the supply and vulnerability of the individual ecosystems and natural resources contained within the core areas of illicit crops which are the object of the program, based on which, from a technical point of view, environmentally critical, sensitive and important ecosystems could be determined and differentiated, along with the areas that should be excluded, treated or specially managed in the development and execution of the program. Nevertheless, the program has resources and technological tools available . . . to comply with the requirements of both the environmental plan and the stipulations of the National Narcotics Council in article 2 of resolution 0005 of 2000"[858];

[856] *Ibid.*, p. 4.

[857] *Ibid.*

[858] *Ibid.*, pp. 4-5.

- There was "no formulation of evaluation parameters for the environmental impacts and effects caused by the Glyphosate eradication program, which could be used to establish in a clear and acceptable manner a level of certainty to support decision-making on environmental management measures, which must be considered in the planning and implementation processes of the spraying project"[859];

- "In the documents which reference the national Environmental Management Plan and the Environmental Management Plan for the Province of Putumayo, no set of programs, actions and concrete management measures for prevention, control, mitigation, compensation and correction have been put forward for the possible impacts and effects caused by the program"[860];

- "No concrete, systematic actions are proposed for the tracking and monitoring of the environmental management measures and their results, supported by a technical design of a set of environmental quality indicators that the program must comply with"[861]; and

- The DNE failed to hire an external technical auditor to assess the environmental and other impacts of the fumigation program[862].

4.55 Confronted with the DNE's intractable opposition to preparing even a rudimentary impact assessment, the Environment Ministry resorted to stronger measures. In an Order referred to as Resolution 341 of 2001, it decreed that:

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[859] *Ibid.*, p. 5.

[860] *Ibid.*

[861] *Ibid.*

[862] *Ibid.*, p. 8, Art. 8.

> "it is necessary to immediately apply preventative measures as established in the resolution portion of this decree, with the aim that these measures, in their development and results, will serve as a means for this Ministry to definitively impose an Environmental Management Plan for the activities of the transitional regime, according to article 38 of Decree 1753 of 1994"[863].

4.56 Article 2 of the Decree ordered the DNE, within six months, to conduct "environmental impact assessments in order to establish the nature and characteristics of possible environmental impacts generated by said activity in the 4 months before [this decree], to investigate potential environmental effects according to the findings and to impose the necessary measures to mitigate and/or compensate for them"[864]. In Article 7, the Ministry further ordered the DNE to prepare two specific impact assessments, namely, a regeneration and dynamic ecological study of sprayed areas; and a glyphosate residue study, including an analysis of its effects on soil properties[865]. In addition to these impact assessments, the Environment Ministry ordered the DNE to conduct other activities relevant to its EIA obligation:

- that the DNE comply with the existing prohibition on spraying over National Parks (Article 3);
- that the DNE identify and map environmentally and socio-economically sensitive areas, and that it propose and implement buffer zones, with the approval of the Ministry of Environment (Article 5);

[863] *Ibid*, p. 5.

[864] *Ibid.*, pp. 5-6.

[865] *Ibid.*, p. 6.

- that the DNE establish "in an immediate and efficient manner" a contingency plan for "undesired events," as well as an inspection, verification, and control plan for verifying the adequate implementation of environmental management measures (Article 6); and

- that the DNE retain an external, independent auditor, as it was already required, but had failed to do, under Resolution 005 of 2000 (Article 8)[866].

4.57 Repeating the pattern, the DNE again brushed off the Environment Ministry's order. Two months later, in July 2001, the Comptroller General of Colombia released an audit of the DNE's operations, drawing attention to the DNE's failure to assess environmental impacts. The Comptroller General noted that despite "sufficient evidence regarding the existence of negative environmental impacts", the DNE had failed to carry out the necessary environmental studies:

> "Despite sufficient evidence regarding the existence of negative environmental impacts by forced eradication by aerial spraying on illicit use crops, which has been reported by various local and regional authorities as well as the Ombudsman, and which have caused widespread protests of rejection and questioning at national and international levels, there is no true monitoring or control of the eradication policy so long as the Environmental Management Plan is not approved"[867].

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[866] *Ibid.*, pp. 5-8.

[867] Comptroller General of the Republic of Colombia, Appointed Comptroller for the Environment, *Special Audit of the Policy for Eradication of Illicit Crops*, p. 2-3 (July 2001). ER, Vol. V, Annex 137.

4.58 The Comptroller General urged the Environment Ministry to apply "the principle of precaution" by ordering "the suspension of the chemical eradication via spraying until the program's environmental, social and economic implications are determined"[868]. In defiance of the Comptroller's call to suspend operations, as well as a temporary Colombian court order to do so[869], Colombia's Anti-Narcotics Chief ordered the aerial sprayings to continue[870].

4.59 The continued spraying prompted the Environment Ministry to commence a formal investigation[871]. This included inquiries into:

- the failure of the DNE to conduct the environmental impacts assessments necessary to identify the scope and character of potential environmental impacts generated by the spray, and resulting

[868] *Ibid.*, p. 29.

[869] *See* Rojas Report, *op. cit.*, para. 150, n. 77. ER, Vol. II, Annex 8. The Colombian court ordered the temporary suspension of the aerial fumigations upon admitting a case presented by the Organization of Indigenous Populations of the Colombian Amazon ("OPIAC") for the spray program's violation of indigenous and human rights. After the Government's open rejection of the court order, the suspension was terminated on 6 August 2001.

[870] "Colombia Drug Czar to Keep Spraying", THE NEW YORK TIMES (New York, 31 July 2001). ER, Vol. IV, Annex 63.

[871] Republic of Colombia, Ministry of Environment, *Resolution No. 1066* (26 Nov. 2001). ER, Vol. V, Annex 139. *See also* Republic of Colombia, Ministry of Environment, *Resolution No. 108*, p. 4 (31 Jan. 2002). ER, Vol. V, Annex 141. ("[A]n administrative proceedings has been initiated aimed at opening an investigation into the failure to comply with some of the requirements contained in Resolution 341 of 2001 . . . "); Republic of Colombia, Ministry of Environment, *Resolution 0670, Whereby a sanction is imposed and other decisions are made* (19 Jun. 2003). EM, Vol. II, Annex 19; Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo*, p. 27 (9 Oct. 2002). ER, Vol. V, Annex 145; Organization of Indigenous Nations of Colombia (ONIC), *Evaluation of the Fumigations in Colombia: Destruction of Rural Areas from Plan Colombia,* pp. 3-42–3-43 (Aug. 2002). ER, Vol. III, Annex 29.

mitigation measures[872]. Specifically, the Environment Ministry criticized the DNE's position that carrying out an impact evaluation was "not possible"[873]. The Ministry maintained that the DNE's opinion did not obviate the need to produce the required studies, particularly since they were indeed possible to perform. It thus ordered the DNE to conduct the assessments "immediately," and to provide quarterly reports on their status[874].

- the failure to implement the two environmental impact studies within three months of Resolution 341, as mandated under Article 7, that is, an ecological regeneration study and a study on the persistence in, and effect of, glyphosate on soil[875]; and

- the failure to immediately establish an inspection, verification, and control program to monitor the effectiveness of environmental protection measures during the spray operations, as required under Article 6 of Resolution 341[876]. In that connection, the Ministry emphasized that "**these activities should have been carried out immediately, therefore efforts should proceed in the manner already indicated, that is, in an immediate manner**"[877].

4.60 The urgency the Ministry of Environment placed on carrying out each of these impact assessments could not have been clearer. It reiterated *seven* times

[872] Republic of Colombia, Ministry of Environment, *Resolution No. 1066*, pp. 1-2, 5 (26 Nov. 2001). ER, Vol. V, Annex 139.

[873] *Ibid.*, p. 2.

[874] *Ibid.*, pp. 2-3, 5.

[875] *Ibid.*

[876] *Ibid.*, pp. 3, 5.

[877] *Ibid.*, p. 3.

that the DNE's compliance must be "**immediate**", highlighting its importance in bold[878]. None of these facts is mentioned in the *Counter-Memorial*.

4.61 Concerned about harms already being caused by the aerial spraying and frustrated by the DNE's failure to implement an adequate EMP after so many years, on the same day, the Ministry of Environment finally imposed an EMP, under Resolution 1065[879].

4.62 Yet, the DNE still kept refusing to carry out environmental impact assessments. Thus, in January 2002, the Environment Ministry again felt compelled to order the production of the long-overdue impact studies[880]. It reiterated that the DNE had failed to present, among other things, environmental impacts assessments as required by Article 2 of Resolution 341. Nor had it produced the two studies on glyphosate (as required by Article 7), on ecological regeneration and glyphosate's effects on soil[881].

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[878] *Ibid.* (emphasis in original).

[879] Republic of Colombia, Ministry of Environment, *Resolution No. 1065* (26 Nov. 2001). EM, Vol. II, Annex 15. *See also* Rojas Report, *op. cit.*, paras. 78-79. ER, Vol. II, Annex 8.

[880] Republic of Colombia, Ministry of Environment, *Resolution No. 108* (31 Jan. 2002). ER, Vol. V, Annex 141.

[881] *Ibid.* The Ministry also informed the DNE that, as the authority responsible for the aerial fumigation program, it was "responsible for ensuring that in the development of the PECIG, the management measures, prevention, mitigation, environmental control and compensation are observed and taken into account by the actors under its coordination, as appropriate". *Ibid.*, pp. 3, 12.

4.63 At a February 2002 meeting with Ecuadorian officials, representatives of the DNE and the Anti-Narcotics Police agreed "that there is a lack of objective and impartial scientific research to study the short- and long-term impacts to the environment and to health, as well as the chemical formulations used to eliminate illicit crops"[882]. The Colombian delegation also admitted that since the spray mixture's "application is not completely uniform in the field . . . it cannot be said that there are no risks to the ecosystem"[883].

4.64 Faced with the persistent refusal by the DNE to assess risks, and confronted by mounting evidence of actual harm, Colombia's National Ombudsman, in October 2002, called for suspending aerial sprayings in Putumayo department (bordering Ecuador), and declared that the suspension should remain in place until the spraying programme was brought into compliance with the existing legal obligations[884]. The need for the suspension

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[882] Republic of Ecuador, Ministry of Environment, *Joint Report from the Workshop: Eradication of Illicit Crops, Bogotá, Colombia*, p. 2 (13-15 Feb. 2002). EM, Vol. IV, Annex 163.

[883] *Ibid.*, p. 10.

[884] These included "particularly those obligations relating to the prohibition from fumigating over indigenous territories and bodies of water". Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo*, p. 37 (9 Oct. 2002). ER, Vol. V, Annex 145. The Ombudsman also explained how, despite the fact that the DNE had the geographic information necessary to avoid these vulnerable and excluded areas, the DNE had sprayed over these areas nonetheless. *See* Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo*, p. 27, para. 3.10.4 (9 Oct. 2002) (explaining that Art. 5(d) of the 2001 EMP "prohibits the forced eradication in still and running bodies of water, in areas of human settlement, in indigenous reservations and areas of productive and agreed upon projects. In order to preserve these areas, the Portfolio defines minimum safety strips, ranging from 200 to 2,000

was underscored, the Ombudsman said, by the DNE's long-standing failure to address fundamental obligations, including those concerning monitoring and mitigating the spray's health and environmental impacts[885]. The Ombudsman also cited the DNE's failure to perform an Environmental Audit and the further failure to adopt or implement an Epidemiological Monitoring Plan[886].

4.65 By June 2003, that is, three-and-a-half years after the spraying began along the border with Ecuador, there still was no EIA or even a rudimentary impact study regarding the aerial spraying programme. As a result, the Ministry of Environment took the unprecedented step of formally *sanctioning and fining* the DNE for failing to assess environmental impacts, on 19 June 2003[887]. Rather than a proper assessment of the programme's environmental impacts, the DNE

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meters. . . . Despite the fact that, on April and July of this year, the PNDA submitted a compact disc to the DNE with information regarding the alternative development projects and indigenous territories, these were sprayed, as shown in the complaints filed before the Ombudsman and the DNE".). ER, Vol. V, Annex 145.

[885] Republic of Colombia, Office of the Ombudsman, National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo, p. 33 (9 Oct. 2002) ("The health of inhabitants of sprayed areas and the environment are equally threatened, since the spraying is carried out without fulfilling the essential preventive measures designed to prevent, control and mitigate potential damage to the population's health and the environment. Such measures include the engaging of an environmental auditor, the implementation of an Epidemiological Monitoring Plan and the strict compliance with the Environmental Management Plan. However, as is clear from this resolution, the aerial spraying has been conducted ignoring the Environmental Management Plan, especially since such spraying was effectuated on indigenous communities and contaminated certain water supplies".). ER, Vol. V, Annex 145.

[886] *Ibid.*, pp. 27, 33, 37. In addition, the Ombudsman urged the CNE to revise the complaint mechanisms created under Resolution No. 17, due to ongoing and fundamental flaws in the procedure. *Ibid.*, p. 37.

[887] Republic of Colombia, Ministry of Environment, *Resolution 0670, Whereby a sanction is imposed and other decisions are made*, p. 13 (19 Jun. 2003). ER, Vol. V, Annex 148. *See also*, Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

had merely presented a literature review of impacts caused by *coca crops* (not the spray mixture that was used to eradicate them)[888]. Brazenly, the DNE defended its inaction based on what it called "the impossibility of carrying out environmental impact evaluations during the execution of the program"[889]. In other words, after blocking all efforts to carry out environmental impact assessments *before* the aerial spraying programme became operational, the DNE argued that it was impossible to carry out such assessments *afterwards*, while it was being executed. The DNE thus created its own version of Catch 22. The Environment Ministry was not amused[890].

4.66 By June 2003, upon fining the DNE for its refusal to comply with its legal obligations to assess environmental impacts, the Ministry of Environment had confirmed that:

- there was still no impact study designed "to establish the nature and characteristics of possible environmental impacts", as required by Article 2 of Resolution 341;

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[888] Republic of Colombia, Ministry of Environment, *Resolution 0670, Whereby a sanction is imposed and other decisions are made*, p. 8 (19 Jun. 2003). ER, Vol. V, Annex 148. *See also ibid.*, p. 6 ("the argument presented does not meet the requirements under letter b), Article 6 of Resolution 341 of 2001, for verification and assessment of environmental management measures during PECIG operations, because it identifies the impacts generated by the establishment of illegal crops and not the impacts of aerial spraying").

[889] *Ibid.*, p. 6.

[890] *Ibid.* ("[T]his Ministry does not share this opinion since it is a very common practice to conduct ex post facto evaluations to determine the effects of an activity on the environment and, based on the analysis of this evaluations, ascertain if the foreseen impacts and environmental management measures give optimum results and/or suggest measures to mitigate and/or offset said impacts".).

- there was still no study assessing either the ecological regeneration in sprayed areas or the degree to which glyphosate remains in soil as residue and its effects on the physio-chemical and biological properties of the soil, as required by Article 7; and

- there was still no inspection, verification and control programme to evaluate the effectiveness of the spray programme's environmental management measures, as required by Article 6[891].

In other words, the DNE had complied with *none* of the environmental impact obligations that had been imposed upon it by the Ministry of Environment. The *Counter-Memorial* is silent about this. Instead, it tells the Court that the Environment Ministry and the DNE "*jointly worked*" to develop the EMP[892].

4.67 The Environment Ministry's decision to fine the DNE produced a backlash that ended its efforts to require an assessment of the aerial spraying programme's environmental impacts. Thereafter, the Minster of Environment was compelled to resign[893]. The new Minister had no environmental experience,

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[891] *Ibid.*, pp. 4-9,12-13.

[892] CCM, Chap. 4, para. 4.13 (emphasis added).

[893] "Suarez new Environment Minister as Rodriguez Quits", BUSINESS NEWS AMERICAS (14 Nov. 2003). ER, Vol. IV, Annex 79. The National Narcotics Council also retaliated against the Environment Ministry's sanctions by eviscerating the environmental protections that had been imposed to protect national parks. In that regard, the Council renounced any intention to abide by the exclusion areas and buffer zones that had protected these areas since the inception of the spray programme. Resolution No. 013 of 27 June 2003 of the National Narcotics Council of Colombia. CCM, Vol. II, Annex 49. As a result, the DNE was given plenary authority to spray directly over protected areas, including national parks. The Resolution was signed by the President of the Council, Mr. Fernando Londoño Hoyos, who also held the position of Minister of Interior and Justice. This was all done in open disregard of Colombia's existing environmental protections. *See* Rojas Report, *op. cit.*, paras. 80-82. ER, Vol. II, Annex 8.

but had served as the *Presidential Advisor on Plan Colombia*, that is, the person responsible for promoting and coordinating the aerial spraying programme[894]. In a classic understatement, the Colombian newspaper *El Tiempo* commented, "It is not clear whether the new minister has the capacity and experience"[895].

4.68 Unsurprisingly, the Ministry of Environment never again challenged the DNE's failure to assess the environmental impacts of the aerial spraying programme. Nor, apparently, did any other agency of the Government of Colombia.

C. THE FAILED EFFORTS OF COLOMBIA'S COURTS TO SECURE AN EIA

4.69 Attempts to compel the DNE to conduct an EIA in regard to the aerial spraying programme were also made by Colombia's courts. They, too, met with no success. And they, too, are ignored in the *Counter-Memorial*.

4.70 In June 2003, the Administrative Court of Cundinamarca issued a judgment in a class action lawsuit brought by Colombian citizens who had been harmed by the aerial spraying programme[896]. The court ruled that the DNE had

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[894] CCM, Chap. 5, para. 5.18; "Suarez new Environment Minister as Rodriguez Quits", BUSINESS NEWS AMERICAS (14 Nov. 2003). ER, Vol. IV, Annex 79.

[895] "Billiard Shot on Three Gangs", EL TIEMPO (Bogotá, 13 Nov. 2003). ER, Vol. IV, Annex 78.

[896] Republic of Colombia, Administrative Tribunal of Cundinamarca, *Claudia Sampedro and Others, Judgment* (13 June 2003). ER, Vol. V, Annex 147. *See also* Rojas Report, *op. cit.*, paras. 87-88. ER, Vol. II, Annex 8.

failed to meet its obligations under the EMP, as established by Resolution 1065, and that the sprayings violated the citizens' right to a healthy environment. It thus ordered the sprayings to cease until the DNE fully complied with its obligations under Articles 2, 6, 7, and 8 of Environment Ministry Resolution 341[897]. These included the DNE's obligations to carry out environmental impact studies on territories sprayed (article 2); to establish an inspection, verification and control plan for monitoring the implementation of the environmental management measures (article 6); to conduct two specific soil impact studies to establish the chemicals' permanence in Colombian soil (article 7); and to hire an external, independent auditor to evaluate impacts on the environment, human health, and agriculture and livestock (article 8)[898]. The court also ordered studies on whether the aerial spraying was harmful to the environment and human health, including a cohort study comparing the health of Colombian citizens exposed to the sprayings with a control group[899]. The court further ordered the DNE to identify the harm caused by the sprayings "with glyphosate plus POEA plus

[897] Republic of Colombia, Administrative Tribunal of Cundinamarca, *Claudia Sampedro and Others, Judgment*, p. 113 (13 June 2003). ER, Vol. V, Annex 147. *See also* Rojas Report, *op. cit.*, para. 88. ER, Vol. II, Annex 8.

[898] Republic of Colombia, Administrative Tribunal of Cundinamarca, *Claudia Sampedro and Others, Judgment*, p. 113 (13 June 2003). ER, Vol. V, Annex 147. *See also* Rojas Report, *op. cit.*, para. 88. ER, Vol. II, Annex 8.

[899] Republic of Colombia, Administrative Tribunal of Cundinamarca, *Claudia Sampedro and Others, Judgment*, p. 113-114 (13 June 2003). ER, Vol. V, Annex 147. *See also* Rojas Report, *op. cit.*, para. 88. ER, Vol. II, Annex 8.

Cosmo Flux" and to implement the correction, mitigation and compensation measures required by law under CNE Resolution 17 of 2001 and the EMP[900].

4.71 The Colombian government appealed the decision. In the meantime, it refused to comply with the court order to suspend the aerial sprayings, and it refused to conduct the impact studies or the external audit ordered by the court. Colombia President Álvaro Uribe announced, "while I am president, we will not suspend the fumigation"[901]. This made it indisputably clear that, as between drug eradication and environmental protection (or protection of Colombian nationals against the health consequences of exposure to the spray mixture), the priority was given to the former, at the expense of the latter, even in the face of a court order.

4.72 In October 2004, the Colombian Council of State ruled on the appeal. Although it recognized that the aerial sprayings do cause harm ("the evidence clearly demonstrates … that certain problems and complaints do arise")[902], the Council of State determined that the harms are outweighed by Colombia's

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[900] Republic of Colombia, Administrative Tribunal of Cundinamarca, *Claudia Sampedro and Others, Judgment*, p. 114 (13 June 2003). ER, Vol. V, Annex 147. *See also* Rojas Report, *op. cit.*, para. 88. ER, Vol. II, Annex 8.

[901] "We Will Continue To Fumigate While I Am President", EL TIEMPO (Bogotá, 30 Jun. 2003). ER, Vol. IV, Annex 76.

[902] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 10 (19 Oct. 2004). ER, Vol. V, Annex 151. *See also* Rojas Report, *op. cit.*, paras. 89-90. ER, Vol. II, Annex 8.

pressing need to eradicate illicit drugs, and the harms could be limited if strict safeguards are applied to the programme: "permanent and strict controls of fumigation activities are required"[903].

4.73 Thus, the Council of State ordered the aerial spray program to adhere with "strict compliance" to "the Environmental Management Plan, imposed by resolution No. 1065, as well as the obligations noted in articles 2, 6, 7, and 8 of resolution No. 341 of 2001"[904]:

> "Clearly, the guidelines stated by the environmental authorities should be followed when illicit crops are being sprayed, and not even the slightest deviation from these should be permitted, which means that it is therefore necessary for permanent controls to be undertaken, with continuous evaluations, of any effects which might begin to appear"[905].

4.74 The Council of State further ordered the DNE to assess the environmental effects of the complete spray mixture, that is, "glyphosate plus POEA plus Cosmoflux", on areas that had been sprayed – adopting as its own the Ministry of

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[903] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 10 (19 Oct. 2004). ER, Vol. V, Annex 151. *See also* Rojas Report, *op. cit.*, paras. 89-90. ER, Vol. II, Annex 8.

[904] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca (19 Oct. 2004), p. 10. ER, Vol. V, Annex 151. *See also* Rojas Report, *op. cit.*, paras. 89-90. ER, Vol. II, Annex 8.

[905] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 10 (19 Oct. 2004). ER, Vol. V, Annex 151. *See also* Rojas Report, *op. cit.*, paras. 89-90. ER, Vol. II, Annex 8.

Environment's long-standing demand[906]. The Council also ordered the Ministry of Social Protection (Colombia's Health Ministry) to evaluate Colombians who had been exposed to "glyphosate plus POEA plus Cosmo Flux", for the purpose of determining the spray's impact on their health and lives[907]. The Council further ordered that both agencies "receive the necessary supervision for ensuring that follow up is carried out of the effects of fumigation"[908].

4.75 The *Counter-Memorial* discusses the decision of the Council of State, but fails to mention any of these elements of it. The *Counter-Memorial* also fails to report that none of the orders issued by the Council of State were complied with by the DNE or the Ministry of Social Protection. Specifically, the DNE failed to comply with the Council's orders to: (i) follow "the guidelines stated by the environmental authorities . . . when illicit crops are being sprayed, and not even the slightest deviation from these should be permitted"; (ii) undertake "permanent controls . . . with continuous evaluations, of any effects which might begin to appear"; or (iii) assess the environmental effects of the complete spray mixture" on areas subject to aerial spraying. And the Ministry of Social Protection failed

[906] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 11 (19 Oct. 2004). ER, Vol. V, Annex 151. *See also* Rojas Report, paras. 89-90. ER, Vol. II, Annex 8.

[907] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 11 (19 Oct. 2004). ER, Vol. V, Annex 151. *See also* Rojas Report, *op. cit.*, paras. 89-90. ER, Vol. II, Annex 8.

[908] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 11 (19 Oct. 2004). ER, Vol. V, Annex 151. *See also* Rojas Report, *op. cit.*, paras. 89-90. ER, Vol. II, Annex 8.

to obey the Council's order to protect Colombia's citizens by "determining the spray's impact on their health and lives". At least, the *Counter-Memorial* presents no evidence of compliance by either agency with these orders.

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4.76 In sum, Colombia has no case on EIA. Contrary to the assertions made in the *Counter-Memorial*, it conducted no such assessment, either before commencing aerial spraying along the border with Ecuador in January 2000, or at any time thereafter. To the contrary, the Colombian government agency responsible for carrying out the programme – the DNE – stubbornly (and successfully) resisted all attempts by other governmental authorities to cajole, persuade or even order it to carry out any form of assessment of the programme's environmental impacts. It was able to get away with this because it had the support of Colombia's highest authorities, including the President of the Republic. Colombia could not allow an EIA to be conducted without running the risk that its findings would be so devastating that it would be impossible to continue the spraying. In the President of Colombia's own words: "[W]hile I am president, we will not suspend the fumigation"[909].

[909] "We Will Continue To Fumigate While I Am President", EL TIEMPO (Bogotá, 30 Jun. 2003). ER, Vol. IV, Annex 76.

Section III. The Spray Programme Violates Other Critical Operational and Safety Requirements

4.77 In this Section, Ecuador further demonstrates the falsity of the *Counter-Memorial*'s assertion that the aerial spray programme is conducted "in accordance with the environmental provisions in force"[910]. It has already been established that no EIA has ever been conducted, and that the programme makes a mockery of the operational requirements in the EMP that are intended to prevent spray drift. In this Section, Ecuador shows how the programme also violates other important safety requirements, including obligations imposed by Colombian law that are also intended to avoid spray drift and its associated harms to people, animals, plants and the environment. Colombia can hardly claim to satisfy its obligation of due diligence when it routinely and blatantly violates its own safety laws and regulations regarding the handling and use of toxic pesticides like those contained in the spray mixture deposited along and near the border with Ecuador.

4.78 Since pesticides, if not used properly, can cause serious harm to human health and the environment, they are required to have warning labels that give legally binding instructions for how and under what circumstances they may be used. A label thus represents a State's considered view on what is required for a particular pesticide to be applied safely.

[910] CCM, Chap. 4, para. 4.23.

4.79 In most jurisdictions – including Colombia – using a pesticide in a manner inconsistent with its label is illegal, and violations carry civil or criminal penalties[911]. Indeed, as the UN Food and Agriculture Organization's ("FAO") guidelines on aerial spraying explain, "[i]n most countries, adhering to the label recommendations is a legal obligation"[912].

4.80 In aerial spraying of herbicides, compliance with a label has an especially close link to environmental protection and human health. For example, the Australian Pesticides and Veterinary Medicines Authority ("APVMA") explains that enforcing label instructions is critical to preventing aerial spraying from causing harm to people and the environment:

> "When the APVMA considers registering an agricultural chemical product, it must satisfy itself, according to scientific principles, that the product can be used to achieve its intended purpose and at the same time not be likely to harm human health, the environment or Australia's international trade. To achieve this end, the APVMA determines instructions for use and limitations on use for each product and places them on the product's label. User

[911] EM, Chaps. 2 and 5, paras. 2.8, 5.39-5.40; *see also* European Union, *Council Directive Concerning the Placing of Plant Protection Products on the Market*, 91/414/EEC, Art. 3(3) (15 July 1991) ("Member States shall prescribe that plant protection products must be used properly. Proper use shall include compliance with the conditions . . . specified on the labelling"); *infra* Chap. 4, n. 181.

[912] Food and Agriculture Organization of the United Nations, *Guidelines on Good Practice for Aerial Application of Pesticides*, p. 8 (2001). ER, Vol. IV, Annex 98. The FAO further explains that "[t]he product label carries statutory instructions for the user, and must cover the crops for which it is registered, the recommended dose rate, the number of treatments permitted during the growing season and how many days before harvest the last treatment may be applied. Additionally, the label will … advise on environmental protection measures to be carried out. Such measures may refer to a 'non-spray' barrier (buffer zone). . . . The product label should provide application details, which should include nozzle selection, volume applied, and application timing". *Ibid.*, pp. 8-9.

> compliance with these instructions and limitations falls under the enforcement powers of the states and territories"[913].

4.81 The U.S. Environmental Protection Agency ("U.S. EPA") makes the same point, emphasizing that label compliance is important for preventing damage to human health and the environment from spray drift:

> "In the U.S., the Agency can assure significant controls on use and potential health and environmental impacts through the pesticide label, and through a state infrastructure which governs label compliance to address issues such as drift and worker and bystander exposure"[914].

4.82 Like other States, Colombia only allows application of a pesticide if its Agriculture Institute, which falls under the jurisdiction of the Ministry of Agriculture, has approved a label for it[915]. Thus, the approval of a label indicates what the Colombian regulatory authorities themselves believe is necessary to protect human health and prevent environmental harm. Since a label is specific to

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[913] Australian Pesticides and Veterinary Medicines Authority (APVMA), *AVPM Operating Principles in Relation to Spray Drift Risk*, p. 2 (15 July 2008) (hereinafter "APVMA Operating Principles"). ER, Vol. III, Annex 22.

[914] United States Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia, Response from EPA Assistant Administrator Johnson to Secretary of State, p. 2 (19 Aug. 2002). EM, Vol. III, Annex 143. The importance of following label instructions is also recognized by pesticide manufacturers. The Spray Drift Task Force, a group of 38 agricultural chemical companies which collaborated on spray drift studies in the United States, notes that "[u]se of pesticide products is strictly governed by label instructions. Always read and follow label directions". Spray Drift Task Force, A Summary of Aerial Application Studies (1997). ER, Vol. III, Annex 10.

[915] Rojas Report, *op. cit.*, paras. 104-105. ER, Vol. II, Annex 8.

a single herbicide, it is a reflection of the authorities' views on the precautions that are necessary to prevent harm from use of that herbicide[916].

4.83 Unable to justify or even explain Colombia's failure to comply with the labels required by its regulatory authorities, the *Counter-Memorial* seeks to minimize their importance. For example, paragraph 7.15 attempts to dismiss a pesticide label as "similar to that commonly found – and generally required – to appear on over-the-counter and prescription medicines, household products, and even processed food products"[917]. But Colombia's position in the *Counter-Memorial* contradicts its own laws, which make it unlawful to use a pesticide in ways that are at variance with the label[918]. Regulations governing the use of pesticides, promulgated by the Colombian Ministry of Health, provide that:

> "All persons involved in the management and use of pesticides must comply with the norms related to the respective activity, as laid out in this decree . . . . Use products according to the instructions on the labels or with the technical assistance of the company"[919].

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[916] *Ibid.*

[917] CCM, Chap. 7, para. 7.15; *see also* CCM, Chap. 7, paras. 7.150, 7.165.

[918] Rojas Report, *op. cit.*, para. 104. ER, Vol. II, Annex 8.

[919] Republic of Colombia, Ministry of Health, *Decree No. 1843* (22 July 1991), *as amended by Decree No. 695* (26 April 1995) and *Decree No. 4368*, Arts. 180, 181(h) (4 Dec. 2006). EM, Vol. II, Annex 11; *see also* Rojas Report, *op. cit.*, para. 104. ER, Vol. II, Annex 8.

4.84 In Colombia, as elsewhere, failure to use a pesticide in accordance with its label instructions subjects the user to civil and criminal penalties[920].

4.85 As detailed below, Colombia's aerial spraying programme consistently and flagrantly violates the label instructions for the pesticides used in its spray mixtures. The pervasive violations of standards that Colombia itself has adopted for the specific chemical products in question is strong evidence of a likelihood of harm and of Colombia's failure to exercise due diligence.

A. ROUNDUP SL

4.86 Consider, for example, the label for Roundup SL, the herbicide that the *Counter-Memorial* says was used from 2000 until 2005, when it was replaced because of its propensity to damage human eyes. The label for Roundup SL, approved by the Colombian Agriculture Institute, sets mandatory limits on, among other things, droplet size, height of spray release and wind speed, all of which reflect the regulatory agency's views on what is necessary to prevent spray drift and avoid unsafe application of the herbicide[921]. The *Counter-Memorial* acknowledges that this label corresponds to one of the herbicide products used in

[920] Rojas Report, *op. cit.*, para. 104, n. 43. ER, Vol. II, Annex 8.

[921] *Colombia Roundup SL Label*. EM, Vol. III, Annex 115.

the spray program[922], but avoids mentioning that the aerial sprayings violate each of the label's requirements.

4.87 In particular, Colombia's Roundup SL label requires droplets to be no smaller than 250 microns[923]. The actual size of the droplets, according to a study paid for by the Colombian and U.S. governments, is much smaller: they have a *median* diameter of 128 microns[924]. That is approximately half the size of the smallest droplets permitted by the label. In fact, according to the same study, half of the droplets are smaller still[925].

4.88 Droplet size smaller than the allowable minimum is not the only way in which the spray programme violates Colombia's Roundup SL label. In addition, Colombia allows spraying at much higher temperatures than the label permits. Although the label instructs against spraying when the temperature is higher than 29°C, the programme's EMP permits spraying at temperatures as high as 35°C. As explained in Chapter 2, warmer air increases evaporation of the spray droplets, thereby reducing their size and making them more prone to drift[926].

4.89 The aerial spraying programme further violates Colombia's Roundup SL label because the spraying takes place at much greater heights than is permitted

[922] CCM, Chap. 4, para. 4.50, n. 310 (referencing Roundup SL Label, EM, Vol. III, Annex 115).

[923] *Colombia Roundup SL Label*. EM, Vol. III, Annex 115.

[924] Hewitt et al, 2009, *op. cit.*, p. 921. CCM, Vol. III, Annex 131-B.

[925] *See supra* Chap. 2, para. 2.136.

[926] *See supra* Chap. 2, para. 2.151.

by the label. Although the label forbids spraying at heights more than 2 metres above the crop, the programme permits spraying as high as 50 metres (and higher if there are obstacles)[927]. That is approximately *twenty-five times* higher than allowed by Colombia's label. And, in reality, as shown in Chapter 2, the planes frequently spray from even higher altitudes: no fewer than 16,143 flights between 2000 and 2008 and within 10 kilometres of Ecuador's border have dispersed the spray mixture above 50 metres[928]. The excessive height of Colombia's spray operations significantly increases spray drift, as Ecuador showed in Chapter 2.

4.90 The programme also violates the Roundup SL label's restrictions regarding wind speed. This too has significant implications for spray drift[929]. Although the label does not allow spraying when the wind is blowing faster than 7 kilometres per hour, the programme's EMP permits it to occur in conditions as windy as 9.26 km/h[930].

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[927] *Resolution No. 1054 of 30 September 2003 of the Ministry of Environment of Colombia*, p. 173 (hereinafter ("2003 Environmental Management Plan"). CCM, Vol. II, Annex 50.

[928] *See supra* Chap. 2, para. 2.103.

[929] *See supra* Chap. 2, para. 2.152

[930] *2003 Environmental Management Plan*, p. 174. CCM, Vol. II, Annex 50. Colombia also violates the Roundup SL label by using the product for an unauthorized purpose. In that regard, the label states that Roundup SL may only be applied for "AGRICULTURAL USE". *Colombia Roundup SL Label*. EM, Vol. III, Annex 115. The aerial spraying programme, however, cannot by any stretch of the imagination, be construed as an agricultural use. Indeed, Colombia does not even try to claim that it is. To the contrary, Colombia has insisted that "coca eradication" is a "non-agricultural use of glyphosate". CCM, Chap. 7, para. 7.14 & n. 551. Pesticides in Colombia may only be employed for authorized uses. Rojas Report, *op. cit.*, paras. 110-119. ER, Vol. II, Annex 8.

4.91 Accordingly, contrary to the *Counter-Memorial*, Colombia's aerial spraying of Roundup SL violates the restrictions that Colombia itself has imposed for that very herbicide, precisely in order to prevent spray drift and its associated harms to off-target areas, including human settlements.[931]

B. GLY-41

4.92 Like Roundup SL, the *Counter-Memorial* refers to the label for GLY-41, the other herbicide that Colombia admits to spraying[932]. But, as with Roundup SL, the *Counter-Memorial* fails to mention that the spray programme regularly violates the restrictions set forth in that label, too.

4.93 The label for GLY-41, approved by Colombia's Agriculture Institute, establishes what the agency considers to be the necessary restrictions for its safe application, including those meant to prevent spray drift.

4.94 For example, Colombia's GLY-41 label states that because "coarse sprays are less likely to drift", users are forbidden from employing "nozzles or nozzle

[931] Failure to comply with the product labels has also been noted by the Colombian Agricultural Institute (ICA). In a report published in 1999, the ICA informed the DNE that the addition of Cosmo-Flux 411F violates the label requirement of "not adding adjuvants". Republic of Colombia, Ministry of Environment, Division of Environmental Licenses, *Order No. 599*, p. 17 (23 Dec. 1999). ER, Vol. V, Annex 132. The ICA also noted that the application rate of 10.4 litres per hectare is 42.4% higher than the application rate of 6 litres per hectare recommended by the manufacturer. *Ibid.*, p. 15.

[932] CCM, Chap. 4, para. 4.50, n. 310 (referencing Label and Safety Data Sheet for GLY-41, CCM, Vol. III, Annex 134).

configurations which dispense spray as fine spray droplets"[933]. However, Colombia's own study determined that the droplets dispersed by its spray planes are "*very fine to fine*"[934]. In other words, Colombia sprays in precisely the manner proscribed by the Agriculture Institute's label, which specifically prohibits "fine spray droplets". As described in the Giles Report, the size of the spray droplets is one of the principal drivers of spray drift and long-distance deposition. The "fine" spray droplets created under the conditions of application in Colombia are especially prone to spray drift[935].

4.95 Colombia also violates the GLY-41 label in another way that has important implications for human health and environmental protection: it sprays the herbicide at an impermissibly high concentration. In that regard, the label requires an applicator to "[u]se the recommended dose of herbicide in 20 to 140 litres of water volume per hectare unless otherwise specified on the label"[936]. Contrary to this instruction, Colombia adds only 13 litres of water per hectare[937].

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[933] Label and Safety Data Sheet for GLY-41, p. 433. CCM, Vol. III, Annex 134.

[934] Hewitt et al, 2009, *op. cit.*, p. 921. CCM, Vol. III, Annex 131-B.

[935] *See supra* Chap. 2, para. 2.138.

[936] Label and Safety Data Sheet for GLY-41, p. 433. CCM, Vol. III, Annex 134. The label, as provided by Colombia in Annex 143 to its *Counter-Memorial*, does not provide any alternative specifications. *Ibid.*

[937] Report by the Anti-Narcotics Direction of the Colombian National Police (DIRAN), p. 306 (8 Feb. 2010). CCM, Vol. II, Annex 67.

The excessive concentration is important because a more concentrated spray mixture enhances its toxicity and the risk of injury to off-target plants[938].

4.96 By implementing the spray programme in the manner it has – in disregard of its own legally-mandated product label requirements – Colombia has violated its own legal protections against harm to human health, animals, non-target plants and the environment. Despite the high risks inherent in aerial spraying of toxic herbicides, Colombia ignored its legal obligations to carry out an EIA[939], to comply with the operational requirements of the EMP (which has the status of law in Colombia)[940], and to adhere to the legal mandate to use these herbicides in strict conformity with label instructions[941]. As discussed in Chapter 7, Colombia's disregard of laws and binding regulations in all these respects demonstrates, at the least, its failure to fulfil its duty of due diligence in the conduct of the aerial spraying programme.

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[938] Stephen C. Weller, Ph.D., *Glyphosate-Based Herbicides and Potential for Damage to Non-Target Plants Under Conditions of Application in Colombia*, pp. 21-22 (Jan. 2011). ER, Vol. II, Annex 3.

[939] *See supra* Chap. 4, Sections I and II.

[940] *See supra* Chap. 2, paras. 2.65-2.73

[941] *See supra* Chap. 4, paras. 4.78-4.95.

Section IV. Colombia's Spray Programme Would Not Be Allowed Elsewhere

4.97 In this Section, Ecuador shows that the conduct of Colombia's aerial spraying programme is not just unlawful under Colombian law; it is also irreconcilable with environmental laws the world over.

4.98 The *Counter-Memorial* is exaggerating when it asserts that the programme is "heavily regulated"[942]. In reality, the rules that govern Colombia's aerial spraying – even if they were enforced (as shown in this and Chapter 2, they are not) – are among the most *lenient* in the world. Indeed, many jurisdictions, including the European Union, have banned aerial spraying outright, except in very limited circumstances. Those jurisdictions that do allow aerial spraying subject it to restrictions that are far stronger than those in Colombia, in order to minimize the risks of spray drift. This further demonstrates that Colombia sprays in a manner likely to cause significant harm, and violates its duty of due diligence.

A. EUROPE

4.99 The *Counter-Memorial* falsely claims that Colombia's aerial spraying programme is endorsed by the European Union. The only "support" for this improbable claim is a reference to a book published in Bogotá by one of

[942] CCM, Chap. 7, para. 7.31.

Colombia's Foreign Ministers during the execution of the programme, Mr. Guillermo Fernández de Soto. The cited parts of his book are not annexed to the *Counter-Memorial*[943].

4.100 Colombia should have checked with the original source, the European Union itself. In fact, the European Parliament *rejected* participation in Plan Colombia[944]. Among the reasons cited was Colombia's "aerial crop-spraying", which the Parliament said was causing "the forced displacement of families and communities" and was "seriously affecting Colombia's rich biodiversity"[945]. The Parliament therefore resolved that the European Union "must take the necessary steps to secure *an end to the large-scale use of chemical herbicides*" given "the dangers of their use to human health and the environment alike"[946]. The

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[943] CCM, Chap. 3, paras. 3.45-3.46 & n. 206-211. Ecuador provides the relevant extracts at ER, Vol. IV, Annex 111. Guillermo Fernández-Soto, *The Possible Illusion: Testimony on Colombian Foreign Policy* (Grupo Editorial Norma, 2004). ER, Vol. IV, Annex 111. As is readily apparent, the cited parts do not, in fact, evidence support for aerial spraying, but rather for structural reform to reduce inequality and instability, support for local human rights organizations, the establishment of a peace promoting institution, and aid programs for people displaced by the aerial fumigations and conflict. *Ibid.*, p. 109.

[944] European Parliament, *Resolution on Plan Colombia and Support for the Peace Process in Colombia*, EUR. PARL. DOC. B5-0087 (1 Feb. 2001). ER, Vol. IV, Annex 99.

[945] *Ibid.*, para. D.

[946] *Ibid.*, para. 15 (emphasis added). Although the EU does not support aerial spraying in Colombia, it does support *other* strategies for reducing coca production. For example, although the EU Drugs Action Plan for 2009-2012 contains a detailed policy for promoting alternative development programmes to reduce the supply of illicit drugs, the Action Plan does not recommend aerial eradication. European Union, "EU Drugs Action Plan for 2009-2012", *Official Journal of the European Union*, 2008/C 326/09 (20 Dec. 2008). Nor is there anything in the earlier EU Drugs Action Plan for 2005-2008 regarding support for aerial eradication. European Union, "EU Drugs Action Plan for 2005-2008", *Official Journal of the European Union*, 2005/C 168/01 (8 July 2005). In that regard, the EU set as an "Objective" for "International Cooperation" the goal to "[p]romote and implement the EU approach to alternative development . . . in

European Parliament's condemnation of aerial spraying in Colombia was later repeated by the EU's Commissioner for External Relations, Mr. Chris Patton, who stated that the spraying programme is "not effective," "affects other crops", and "harms health and the environment"[947]. None of this is mentioned in the *Counter-Memorial*, presumably because it defeats Colombia's attempt to portray the European Union as supportive of its spray programme.

4.101 In fact, the EU's stance against aerial spraying in Colombia is consistent with its approach to the aerial application of pesticides generally: that it is dangerous for human health and the environment and should not be done except in rare and tightly controlled circumstances. The policy against aerial spraying is unambiguous. EU Directive 2009/128/EC requires that, subject to certain limited and narrow exceptions, "*Member States shall ensure that aerial spraying is*

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cooperation with third countries, taking into account human rights, human security and specific framework conditions". European Union, "EU Drugs Action Plan for 2009-2012", *Official Journal of the European Union*, 2008/C 326/09, para. 17 (20 Dec. 2008).

[947] "EU criticises Colombia on rights", BBC (London, 22 Jan. 2004). ER, Vol. IV, Annex 80.

prohibited"[948]. The prohibition on aerial spraying applies equally to the spraying of glyphosate-based herbicides and all other pesticides[949].

4.102 As explained by Dr. Reinhard Joas, the international expert on chemicals regulation who served as technical advisor to the European Commission in developing the Directive that banned aerial spraying, the prohibition represents the consensus view on the minimum standard that all 27 EU Member States agree is necessary to protect human health and to prevent environmental harm[950]. The EU consensus is the culmination of a lengthy consultation process, beginning in 2002, which involved extensive discussions among Member States, EU regulatory bodies, scientific and technical experts, and representatives of affected industries and other stakeholders[951]. It was the subject of considerable deliberation by expert working groups and studies that reviewed, among other things, the human health and environmental impacts of different policy

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[948] This ban on aerial spraying is part of a broader EU policy "establishing a framework for Community action to achieve the sustainable use of pesticides". European Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, Art. 9(1) (21 Oct. 2009). ER, Vol. IV, Annex 109. Joas Report, *op. cit.*, p. 3, 11-12. ER, Vol. II, Annex 8.

[949] European Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, Art. 2(1), 3(10)(a) (21 Oct. 2009). ER, Vol. IV, Annex 109.

[950] Joas Report, *op. cit.*, pp. 3, 5, 16. ER, Vol. II, Annex 8.

[951] *Ibid*, pp. 7-11. European Commission, *Sustainable Use of Pesticides: Historical Background*, *available at* http://ec.europa.eu/environment/ppps/history.htm (last visited 16 Jan. 2011).

alternatives[952]. This deliberative process resulted in the following determination by the European Union:

> "Aerial spraying of pesticides has the potential to cause significant adverse impacts on human health and the environment, in particular from spray drift. Therefore, aerial spraying should generally be prohibited with derogations possible where it represents clear advantages in terms of reduced impacts on human health and the environment in comparison with other spraying methods, or where there are no viable alternatives, provided that the best available technology to reduce drift is used"[953].

4.103 As explained in a report prepared by Dr. Joas, the Directive is based upon the recognition of the following risks:

> "Pesticides have an adverse impact on human health when the degree of exposure exceeds the level considered to be safe. Both direct exposure (workers and operators) and indirect exposure (consumers, residents, and bystanders) are of concern in this respect. Indirect risks, via spray drift or otherwise, can be amplified for vulnerable population groups such as children, the elderly, immunologically compromised people, and agricultural workers who receive more intensive exposure.

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[952] Joas Report, *op. cit.*, pp. 7-11. ER, Vol. II, Annex 8; *see also* Commission of European Communities, *The Impact Assessment of the Thematic Strategy on the Sustainable Use of Pesticides*, SEC(2006) 894 (12 July 2006) (hereinafter "Impact Assessment"), p. 97-102. ER, Vol. IV, Annex 103; BiPro, *Assessing Economic Impacts of the Specific Measures to be Part of the Thematic Strategy on the Sustainable Use of Pesticides*, ENV.C.4/ETU/2003/0094R (Oct. 2004), *available at* ec.europa.eu/environment/ppps/pdf/bipro_ppp_final_report.pdf (last visited 23 Jan. 2011); Commission of European Communities, *A Thematic Strategy on the Sustainable Use of Pesticides, Technical Annex*, SEC(2006) 895 Final (12 July 2006), pp. 4-5, 7. ER, Vol. IV, Annex 104. The European Union notes that the Directive is "accompanied by a detailed impact assessment and a legislative proposal to create an overall coherent and consistent policy framework for pesticide use". European Commission, *EU Policy for a Sustainable Use of Pesticides: The Story Behind the Strategy*, pp. 7, 13 (2007). ER, Vol. IV, Annex 106.

[953] European Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, Preamble, para. 14 (21 Oct. 2009). ER, Vol. IV, Annex 109. Joas Report, *op. cit.*, p. 5. ER, Vol. II, Annex 8.

. . .

> Pesticides, which may enter the environment through direct application, leaching, run-off or spray drift, have adverse impacts by contaminating water, air and soil, damaging plants and wildlife, and causing a loss of biodiversity"[954].

B. INDIVIDUAL STATES

4.104 Many individual States have adopted regulations in regard to aerial spraying of pesticides that are as fully protective of human health and the

[954] Joas Report, *op. cit.*, pp. 5-6. ER, Vol. II, Annex 8. Derogation from this general rule is allowed only in limited and narrow circumstances, when the following conditions are met: there are no viable alternatives, or clear advantages in terms of health and environmental impacts; the pesticides used are explicitly approved for aerial spraying following a specific assessment addressing risks from aerial spraying; and the operator and responsible enterprise are properly certified to conduct aerial spraying. Moreover, if the area to be sprayed is in close proximity to areas open to the public, specific risk management measures are required to ensure that there are no adverse effects on the health of bystanders. The area to be sprayed must not be in close proximity to residential areas. Further, aircraft must be equipped with best available technology to reduce spray drift. Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, Art. 9(2)(a)-(f) (21 Oct. 2009). ER, Vol. IV, Annex 109; *see also* Joas Report, *op. cit.*, p. 11. ER, Vol. II, Annex 8. The burden is on the applicator to demonstrate compliance with the above conditions, in order to receive approval to conduct aerial spraying from the relevant regulatory authority. Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, Art. 9(4) (21 Oct. 2009). ER, Vol. IV, Annex 109; *see also* Joas Report, *op. cit.*, p. 12. ER, Vol. II, Annex 8. In the rare cases where approvals to conduct aerial spraying are granted, important notification and monitoring requirements must be adhered to: the approval to conduct aerial spraying must contain measures necessary for warning residents and bystanders in due time and to protect the environment in the vicinity of the area sprayed; national authorities must keep records of requests and approvals including relevant information such as the area to be sprayed, the provisional day and time of spraying, and the type of pesticide used; and monitoring must be conducted to ensure compliance with the above conditions (*e.g.* no adverse effects on bystanders). Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, Art. 9(3), (4), (5) (21 Oct. 2009). ER, Vol. IV, Annex 109; *see also* Joas Report, *op. cit.*, pp. 11-12. ER, Vol. II, Annex 8. Dr. Joas concludes that "[b]ased on the information provided by Colombia, its aerial spraying program does not fulfil several of the conditions required to obtain an exceptional permit under the EU Directive. In light of the risk-prevention rationale of Directive 2009/128/EC and its general ban on aerial spraying, the aerial spraying program to eradicate coca crops in Colombia would not be authorized in the EU". Joas Report, *op. cit.*, p. 16. ER, Vol. II, Annex 8

environment as the European Union's. Even prior to EU Directive 2009/128/EC, some European States, including Estonia and Slovenia, instituted a total ban on aerial spraying with no possibility for exceptions[955]. Others permit spraying only in extremely limited circumstances. For example, as reported by the Organization for Economic Co-operation and Development, the regulations in Denmark and Switzerland are so restrictive that aerial spraying "seldom" occurs[956]. In France and Italy, aerial spraying is banned as a general rule, with permits issued only in exceptional cases[957]. In Finland and Sweden, aerial spraying is allowed only in what the OECD describes as "exceptional cases"[958]. In fact, Sweden has authorized only two aerial spraying operations in the last 20 years[959].

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[955] Republic of Estonia, *Plant Protection Products Act*, entered into force 1 May 2004, amended July 1, 2008, Art. 78(4). ER, Vol. III, Annex 20; Republic of Slovenia, *Act on Plant Protection Products*, Art. 8 (9 Sept. 2004). ER, Vol. III, Annex 16; *see also* Impact Assessment, *op. cit.*, p. 99. ER, Vol. IV, Annex 103. Aerial spraying is also banned in parts of Austria. Austrian Federated State of Vorarlberg, Ordinance on Plant Protection Products, LGB1.Nr. 18/2008, § 1(1) (2008). ER, Vol. III, Annex 21.

[956] Organization for Economic Co-operation and Development (OECD), *Activities to Reduce Pesticide Risks in OECD and Selected FAO Countries, Part I: Summary Report,* OCDE/GD(96)121, p. 44 (1996). ER, Vol. IV, Annex 96.

[957] Italian Republic, Legislative Decree No. 194, Art. 5(22)(b) (17 Mar. 1995). ER, Vol. III, Annex 9; French Republic, *Code rural et de la pêche maritime*, Article L253-3, p. 32 (2010). ER, Vol. III, Annex 24.

[958] Organization for Economic Co-Operation and Development (OECD), *Activities to Reduce Pesticide Risks in OECD and Selected FAO Countries, Part I: Summary Report,* OCDE/GD(96)121, p. 44 (1996). ER, Vol. IV, Annex 96; Sweden, Environmental Code 808, Chap. 14, § 18 (last amended 2009) (1998). ER, Vol. III, Annex 11.

[959] Organization for Economic Co-Operation and Development (OECD), Joint Meeting of the Chemicals Committee and The Working Party on Chemicals, Pesticides and Biotechnology, *Report of the OECD Pesticide Risk Reduction Steering Group: The Second Risk Reduction Survey*, ENV/JM/MONO (2006) 14, p. 103 (19 July 2006). ER, Vol. IV, Annex 105.

4.105 Numerous States that allow aerial spraying require advance warning to nearby residents and resource managers prior to the spraying. For example, in the United Kingdom, where regulations require that "all reasonable precautions" be taken to prevent spray drift, notice must be given "well before" the pesticide is applied, and "certainly not after the minimum consultation period set by law"[960]. In Nova Scotia, Canada, aerial applicators must notify local residents and businesses at least 30 days before spraying, and post signs on access roads 30 days prior to spraying[961]. Unlike Colombia, these States regulate aerial spraying in a manner that is consistent with the UN FAO Guidelines, which explain that:

> "Members of the public, not directly involved with the spray operation, may also be affected by an aerial pesticide application so the contractor/farmer may have a mandatory obligation to issue 'prior warnings' to any person or organisation that might be affected or concerned. Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites"[962].

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[960] United Kingdom, Department for Environment, Food and Rural Affairs, *Code of Practice For Using Plant Protection Products*, p. 31, 144 (2006). ER, Vol. III, Annex 17. UK regulations require that the following information be furnished when preparing for aerial spraying: name, address, and phone number of the person applying the pesticide; name of the pesticides intended for use and their active ingredients; date and time of intended spraying; and confirmation that the same details were provided to the Chief Environmental Health Officer for the district. *Ibid*., p. 144. In France, aerial spraying operations conducted in locations frequently used by people must be noticed well in advance. French Republic, Decree On the Use of Products Mentioned in Article L.253-1 of Rural Code, p. 33 (5 Mar. 2004). ER, Vol. III, Annex 14.

[961] Nova Scotia Environment and Labour, *Media Backgrounder: Herbicide Management*, pp. 1-2 (July 2007). ER, Vol. III, Annex 19.

[962] Food and Agriculture Organization of the United Nations, *Guidelines on Good Practice for Aerial Application of Pesticides*, p. 21 (2001). ER, Vol. IV, Annex 98.

4.106 No such warnings have ever been given to Ecuadorian nationals in areas affected by Colombia's spray programme.

4.107 States that allow aerial spraying impose strict regulations in regard to operational requirements. Regarding droplet size, the United Kingdom requires that the "coarsest appropriate spray quality" be used[963]. Colombia's programme could not meet this standard because, as discussed above, its own hired experts classify the droplet size as "fine to very fine"[964]. Colombia's droplets would not be permitted in Costa Rica either, where aerial spraying regulations require the average droplet size of the spray mixture to be "between 200 – 300 microns in order to minimize drift due to drops with a slower terminal velocity and greater potential for evaporation"[965]. As indicated above, the median droplet size in Colombia is much smaller: 128 microns[966].

4.108 Height of spray release is also subject to strict limitations. In Costa Rica, spray planes may not release chemicals more than 5 metres above the crop canopy[967]; in the Netherlands, spraying is prohibited more than 4 metres above

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[963] United Kingdom, Department for Environment, Food and Rural Affairs, *Code of Practice For Using Plant Protection Products*, § 4.7.4 (2006). ER, Vol. III, Annex 17.

[964] Hewitt et al, 2009, *op. cit.*, p. 921. CCM, Vol. III, Annex 131-B.

[965] Costa Rica, *Executive Decree No. 34202-MAG-S-MINAE-MOPT-G-MSP*, Art. 1(c) (21 May 2007). ER, Vol. III, Annex 18.

[966] Hewitt et al., 2009, *op. cit.*, p. 921. CCM, Vol. III, Annex 131-B.

[967] Costa Rica, *Executive Decree No. 34202-MAG-S-MINAE-MOPT-G-MSP*, Art. 1(b) (21 May 2007). ER, Vol. III, Annex 18.

crops[968]. In contrast, Colombia's EMP allows spraying at 50 metres[969]. As shown in Chapter 2, even this dangerously high limit has been violated by Colombia's spray planes on over 16,143 spray flights along or near the border with Ecuador[970].

4.109 Nor does Colombia's programme meet the meteorological requirements imposed by other States in regard to aerial spraying. Colombia permits spraying in weather as warm as 35°C[971]. In contrast, the Netherlands forbids spraying when the temperature rises above 25°C – a 10°C difference – to avoid the greater risks of spray drift at elevated temperatures[972]. The Colombian aerial spraying programme is also incompatible with the law in the United Kingdom, which bars spraying when the temperature is higher than 30°C because, according to the Department for Environment, Food and Rural Affairs, "rising air currents may carry spray droplets and vapour in an unexpected way"[973]. In Costa Rica, a

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[968] Organization for Economic Co-Operation and Development (OECD), Joint Meeting of the Chemicals Committee and The Working Party on Chemicals, Pesticides and Biotechnology, *Report of the OECD Pesticide Risk Reduction Steering Group: The Second Risk Reduction Survey*, ENV/JM/MONO (2006)14, p. 81 (19 July 2006). ER, Vol. IV, Annex 105.

[969] Resolution No. 1054 of 30 September 2003 of the Ministry for the Environment of Colombia, p. 173. CCM, Vol. II, Annex 50.

[970] *See supra* Chap. 2, para. 2.103.

[971] Resolution No. 1054 of 30 September 2003 of the Ministry for the Environment of Colombia, *op. cit.*, p. 173. CCM, Vol. II, Annex 50.

[972] Organization for Economic Co-Operation and Development (OECD), Joint Meeting of the Chemicals Committee and The Working Party on Chemicals, Pesticides and Biotechnology, *Report of the OECD Pesticide Risk Reduction Steering Group: The Second Risk Reduction Survey*, ENV/JM/MONO (2006)14, p. 81 (19 July 2006). ER, Vol. IV, Annex 105.

[973] United Kingdom Department for Environment, Food and Rural Affairs, *Code of Practice For Using Plant Protection Products*, p. 90 (2006). ER, Vol. III, Annex 17.

tropical country where conditions are similar to Colombia, aerial spraying must be suspended if the temperature exceeds 29ºC[974].

4.110 Differences between Colombia and the rest of the world exist with respect to wind conditions as well. For example, in Australia, a minimum wind speed of 3 kilometres per hour is required[975]. The Australian regulatory agency explains that:

> "A minimum speed of 3 km/hr is required because times of no wind (essentially below 3 km/hr) often precede or accompany periods of highly stable air and surface temperature inversion conditions both of which can greatly increase spray drift risk. Moreover, when wind resumes after periods of calm, its direction is not predictable. Spraying only when there is at least some wind ensures that wind direction is known (so that drift onto sensitive areas can be avoided) and greatly reduces the likelihood of surface temperature inversions forming during or shortly after application"[976].

4.111 Similarly, aerial application guidance from the United Kingdom states that "[t]he safest conditions in which to spray are when it is cool and humid with a steady wind of 2 to 4 miles an hour or 3.2 to 6.5 kilometres an hour (light breeze) blowing away from any sensitive areas or neighbours' land"[977].

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[974] Costa Rica, *Executive Decree No. 34202-MAG-S-MINAE-MOPT-G-MSP*, Art. 1(g)(2)-(3) (21 May 2007). ER, Vol. III, Annex 18.

[975] APVMA Operating Principles, *op. cit.*, p. 21. ER, Vol. III, Annex 22.

[976] *Ibid.*, p. 21.

[977] United Kingdom Department for Environment, Food and Rural Affairs, *Code of Practice For Using Plant Protection Products*, p. 89 (2006). ER, Vol. III, Annex 17. In Saskatchewan, Canada, the regulators direct: "[d]o not spray under dead calm conditions in early morning, night,

4.112 Unlike these and other jurisdictions, Colombia's spray program has *no minimum threshold* for wind speed. This is particularly dangerous because calm wind conditions favour temperature inversions that produce greater spray drift and off-target deposition[978].

4.113 The dangers inherent in aerial spraying – and thus the need for strict regulation – are also recognized by courts across many jurisdictions. For example, a 2009 decision by the U.S. Court of Appeals of Arizona found that despite the use of modern technology, aerial spraying of pesticides remains an inherently dangerous activity because "the risk of harm cannot be eliminated through the exercise of reasonable care"[979]. In holding the aerial applicator liable for damage caused to an adjacent landowner's property, the Arizona court found that the risk of harm to nearby land, property and people could not be eliminated through the use of advanced technologies such as "improved spray nozzles, new computer-controlled release systems, use of GPS navigation systems and inclusion of 'thickening agents' in spray solutions"[980]. The court also considered the state's strict regulation of aerial spraying as evidence of the inherent danger of

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or late evening. These are often associated with temperature inversions and the combination of these factors can result in long-distance spray drift (2 km or more)". Government of Saskatchewan, Ministry of Agriculture, *2010 Guide to Crop Protection*, p. 12 (2010). ER, Vol. III, Annex 25.

[978] Durham K. Giles, Ph.D., *Spray Drift Modeling of Conditions of Application for Coca Crops in Colombia*, pp. 27-28, 42-44 (Jan. 2011). ER, Vol. II, Annex 2; Hansman & Mena Report, *op. cit.*, p. 23, n.9. ER, Vol. II, Annex 1; *supra* Chap. 2, para. 2.152.

[979] *Pride of San Juan v. Pratt*, 221 Ariz. 337, 338, 340 (Ct. App. 2009).

[980] *Ibid.*, p. 340.

the activity, explaining that "[t]he legislature regulates this activity in part to avoid the serious potential harm that can be caused by pesticides and chemical drift", and that violation of the regulations can result in criminal penalties[981].

4.114 Courts in other jurisdictions have reached the same conclusion. For instance, in 2009 a court in Argentina granted a writ of *amparo* filed by the citizens of Santa Fé, enjoining for six months the aerial spraying of pesticides, including Roundup. The court found that aerial application caused adverse consequences for public health and the environment[982]. The decision was upheld on appeal by the Second Chamber of the Court of Civil and Commercial Appeals of Santa Fé[983]. The appellate court affirmed that the use of agrochemicals such as glyphosate could cause severe harm to the environment, to animals, and to the health and quality of life of the population of Santa Fé, in violation of the law[984].

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[981] *Ibid.,* p. 342, n. 8.

[982] "A Constitution Appeal Is Ordered In San Jorge: A Judge Recognizes the Risk of Glyphosate Fumigations", ENTRE RIOS ENTRE TODOS (Entre Rios, 13 Apr. 2009). ER, Vol. IV, Annex 86.

[983] Shane Romig, "Argentina Court Blocks Glyphosate Spraying Near Rural Town", DOW JONES NEWSWIRES (21 Mar. 2010). ER, Vol. IV, Annex 91.

[984] "Santa Fe: A Ruling In Favor of Life", RENACE (4 Jan. 2010). ER, Vol. IV, Annex 88. In May 2009, an environmentalist group petitioned Argentina's Supreme Court, seeking a temporary ban on the use of Roundup after reported high incidence of birth defects and carcinogenesis in people living near rural areas having been sprayed with herbicides, and scientific evidence linking genetic malformations in amphibians in those areas to glyphosate. "Weed Killer Kills Human Cells: Study Intensifies Debate over 'Inert' Ingredients", ENVIRONMENTAL HEALTH NEWS (22 June 2009). ER, Vol. IV, Annex 87. Furthermore, the Municipality of Paraná has prohibited fumigations with Roundup close to urban areas, after complaints of damaged crops and the death of animals by local residents. The only application of herbicides allowed is manual fumigation outside urban areas, after the processing of the corresponding permit. "It Is Warned that Fumigations Are Being Carried Out in Paraná Despite Them Being Prohibited", LA VOZ (9 Jan. 2010). ER, Vol. IV, Annex 89. And in San Pedro Peninsula, the local authorities prohibited the

Conclusion

4.115 Colombia's aerial spraying programme is not only conducted in a manner that is impermissible in countries around the world, it is executed in ways that are impermissible even in Colombia. In sum, Colombia sprays huge swaths of territory immediately adjacent to Ecuador with a toxic chemical herbicide without ever having carried out an EIA to determine the spray's impacts on human health or the environment, in defiance of the demands of its Environment Ministry, National Ombudsman, Comptroller General, and courts; it executes the aerial spraying programme in a manner that flagrantly disregards the operational requirements of its own EMP, which has the status of law and is intended to prevent or minimize harm to human health and the environment; and it ignores legally mandated requirements intended to avoid spray drift and associated harms to health and the environment. These failures to exercise even a minimum amount of diligence in carrying out what is an inherently dangerous activity all but assure spray drift into Ecuador at toxic levels sufficient to harm the local population, kill legitimate crops, and wreak havoc on the delicate natural environment characteristic of the border region. In short, these facts destroy Colombia's claim that it satisfied its obligation of due diligence.

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use of Roundup, invoking scientific uncertainty over the consequences of its application. "Fumigations with Glyphosate Are Not Permitted on the Peninsula" (10 Feb. 2010). ER, Vol. IV, Annex 90.

CHAPTER 5.

VIOLATION OF TERRITORIAL SOVEREIGNTY

5.1 In its *Memorial*, Ecuador showed how the adverse effects of the use of toxic herbicides by Colombia in the border area with Ecuador has violated Ecuador's territorial sovereignty. As noted by Ecuador, and not contradicted by Colombia, respect for a State's territorial sovereignty is a fundamental obligation under general international law as well as the treaties applicable to the Parties in this dispute, and it gives rise to a distinct cause of action in international law[985]. In this case, by failing to take steps to prevent the drift of toxic herbicides onto the territory of Ecuador, Colombia has violated the duty to respect Ecuador's territorial sovereignty. As described in the *Memorial* and in more detail in Chapters 2 through 4 of this *Reply*[986], Colombia has allowed this to occur by failing to require a proper environmental assessment to be carried out in accordance with national and international legal requirements (including but not limited to the obligations to carry out (1) the transboundary environmental impact assessment required by general international law[987], and (2) the assessment required by Article 7(3) of the 1989 Indigenous and Tribal Peoples' Convention (ILO Convention No. 169[988]), and by failing to exercise proper diligence in authorising the spraying activities, namely by:

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[985] Memorial of Ecuador, Vol. I, Chap. 7, paras. 7.3-7.8 (28 Apr. 2009) (hereinafter "EM").

[986] EM, Chap. 8, Section C, "Colombia Failed to Take Adequate Precautionary Measures;" *see supra* Chaps. 2-4.

[987] *See infra* Chap. 6; *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, 2010*, pp. 60-61, paras. 203-206.

[988] *See infra* Chap. 7; ILO Convention No. 169 Concerning Indigenous and Tribal Peoples, Art. 7(3) (hereinafter "ILO Convention 169").

- allowing the use of inappropriate chemicals[989];
- failing to prevent planes from operating at a speed and height that will prevent spray drift[990];
- permitting inappropriate aircraft to be utilised[991];
- failing to prevent small droplet sizes from being sprayed[992];
- allowing night spraying[993];
- paying insufficient attention to climatic temperatures and wind conditions[994]; and
- permitting the herbicide spray to be applied at an excessive application rate[995].

Colombia does not claim any right to allow overflights of the territory of Ecuador; nevertheless, there is evidence that at least some such flights have occurred in a manner not authorised by Ecuador, in violation of Ecuadorian sovereignty[996].

5.2 In its *Counter-Memorial*, Colombia has chosen to avoid engaging with Ecuador's arguments. It has invoked a well-trodden path frequently adopted by a Respondent, namely to rewrite the arguments made by the Applicant and respond

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[989] *See supra* Chap. 2, paras. 2.17-2.64.

[990] *See supra* Chap. 2, paras. 2.88-2.107.

[991] *See supra* Chap. 2, paras. 2.115-2.122.

[992] *See supra* Chap. 2, paras. 2.135-2.138.

[993] *See supra* Chap. 2, paras. 2.145-2.149.

[994] *See supra* Chap. 2, paras. 2.151-2.154.

[995] *See supra* Chap. 2, paras. 2.140-2.143.

[996] *See supra* Chap. 2, para. 2.163, n. 320. *See also* R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008*, p. 13 (Jan. 2011). ER, Vol. II, Annex 1.

to arguments that have not actually been made. Thus, Colombia has recast Ecuador's claim as being that "no detectable or measurable trace of spray mix, no matter how small, should be allowed to enter Ecuador's . . . territory"[997]. There is no citation to any such assertion, which is not Ecuador's position. As shown in Chapters 2 and 3 of the *Reply*, the evidence of substantial harm is well-established.

5.3 As noted in Chapter 3, Colombia has ignored the harm caused to its own territory[998], despite the reports of extensive harm there. Colombia's Office of the Ombudsman has concluded that the programme had affected "thousands of Colombians" and had "high socio-economic and environmental cost"[999], identifying damage to crops, animals and people, and raising concerns about "the ruin of their household finances" and the "severe food security problem"[1000]. Departmental and local authorities have also complained of the severe damage caused in Colombia: in 2002 the Governor of Putumayo Department, adjacent to Ecuador, denounced the aerial spraying, stating that the damage caused to legal

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[997] Counter-Memorial of Colombia, Vol. I, Chap. 8, para. 8.35 (29 Mar. 2009) (hereinafter "CCM").

[998] CCM, Chap. 1, para. 1.34(1).

[999] Republic of Colombia, Office of Ombudsman, *The Implementation of the Strategy of Aerial Eradication of Illicit Crops With Chemicals, From a Constitutional Perspective*, p. 1 (Apr. 2003). ER, Vol. V, Annex 146.

[1000] Republic of Colombia, Office of the Ombudsman, *Ombudsman Resolution No. 4*, p. 4 (12 Feb. 2001). EM, Vol. II, Annex 92. *See also* EM, Chap. 5, paras. 5.106-5.108.

crops by the program was "causing an economic crisis and displacement of the population"[1001].

5.4 This directly contradicts Colombia's claim of limited effects[1002]. Colombia's *Counter-Memorial* confirms that between 2002 and 2008 some 117 persons were compensated, thereby admitting that some harm has occurred[1003]. Yet Colombia has ignored the thousands of complaints of property damage which are awaiting compensation. Indeed, Colombia's Comptroller General reports that 4,500 complaints were received by the Ministry of Justice in 2002 alone[1004]. Similarly, in 2001 the Colombian Office of the Ombudsman reported receiving 6,553 complaints[1005].

5.5 As described in Chapter 3, the harm in Colombia has been extensive. To cite but a few examples: in 2000, the mayor of Puerto Guzmán reported that at least seven people had died as a consequence of aerial spraying in that area[1006]; in

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[1001] "Putumayo: Governor Denounces Fumigations", HOY (Quito, 29 July 2007). ER, Vol. IV, Annex 85.

[1002] CCM, Chap. 1, para. 1.34(1).

[1003] CCM, Chap. 4, para. 4.22. *See also ibid.*, Chap. 1, para.1.34(1).

[1004] Comptroller General of the Republic of Colombia, *Plan Colombia: Fifth Evaluation Report* (Dec. 2004), p. 36. ER, Vol. V, Annex 152.

[1005] Republic of Colombia, Office of the Ombudsman, *National Ombudsman Resolution No. 26, Human Rights and International Humanitarian Law in the Context of Armed Conflict and Fumigation of the Coca Crops in the Province of Putumayo* (9 Oct. 2002), p. 24. ER, Vol. V, Annex 145. *See also supra* Chap. 3, paras. 3.170-3.173.

[1006] "Mayor Denounces Fumigations", EL UNIVERSO (Guayaquil, 22 Aug. 2000). ER, Vol. IV, Annex 56.

2001, the Colombian Comptroller-General reported that spraying had caused "nausea, vomiting, diarrhea, and burning of the eyes, skin and throat", all symptoms that "coincide with information in the literature and are consistent with the position of the Ministry of Health"[1007]; also in 2001, the Putumayo Department of Health recorded a sharp increase in acute respiratory infections, diarrhea, dermatitis, and skin infections following sprayings just 20 kilometres from Ecuador[1008]; and in 2003, the Colombian Office of the Ombudsman reported an "increase in medical visits related to skin problems, gastrointestinal, respiratory infections and conjunctivitis after the fumigations", particularly with "children" who, due to their "fragile state", have had their "fundamental right to life and health . . . affected"[1009]. Thus, Colombia's claim that "[n]o substantiated complaint of death or serious harm to human health has been presented in Colombia since the inception of the program"[1010] disregards the findings of its own public officials[1011]. That harm, as noted in Chapter 3, has been substantiated

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[1007] Comptroller General of the Republic of Colombia, *Plan Colombia: Second Evaluation Report*, p. 43–44 (10 Dec. 2001). EM, Vol. II, Annex 94.

[1008] EM, Chap. V, para. 5.103.

[1009] Republic of Colombia, Office of Ombudsman, *The Implementation of the Strategy of Aerial Eradication of Illicit Crops With Chemicals, From a Constitutional Perspective*, p. 6 (Apr. 2003). ER, Vol. V, Annex 146.

[1010] CCM, Chap. 1, para. 1.34(1).

[1011] It also disregards the numerous independent accounts that confirm the extensive damage caused by the aerial spraying. *See, e.g.*, "The Void of the Fumigations", EL TIEMPO (Bogotá, 28 May 2000) ("[i]n the countryside, reporters from this newspaper confirmed the destruction of plantain plants and corn, as well as expanses of virgin forest"). ER, Vol. IV, Annex 55. Larry Rohter, "To Colombians, Drug War is Toxic Enemy", THE NEW YORK TIMES (New York, 1 May 2000) (describing damage to a remote Yanacona Indian village and noting that "dozens" of residents became ill and numerous farms were damaged). ER, Vol. IV, Annex 54; Juan Forero,

by international observers, including the UN Special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people, who, in 2004, noted the "adverse effects of indiscriminate spraying, including environmental damage to the topsoil, fauna, flora and water, the destruction of subsistence crops and direct damage to human health"[1012].

5.6 Colombia seeks to elide Ecuador's claims of violation of territorial sovereignty into a renewed discussion of the legal issues relating to transboundary environmental harm, a matter that Ecuador has addressed separately, in Chapter 8 of its *Memorial* and in Chapter 6 of this *Reply*. The evidence shows that the amount of herbicide that is transported into Ecuador's territory as a result of Colombia's activity is significant and gives rise to adverse

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"No Crops Spared in Colombia's Coca War", THE NEW YORK TIMES (New York, 31 Jan. 2001). ER, Vol. IV, Annex 60; "Fumigation Dispute", EL TIEMPO (Bogotá, 22 July 2001). ER, Vol. IV, Annex 62; "Colombia Denounces Indiscriminate Spraying in Putumayo", EL COMERCIO (Quito, 10 Jan. 2002). ER, Vol. IV, Annex 64; "Another Controversy Over Fumigation", EL COMERCIO (Quito, 9 July 2002). ER, Vol. IV, Annex 67; "Requesting an End to Fumigations", EL TIEMPO (Bogotá, 10 Oct. 2002). ER, Vol. IV, Annex 72; "Fumigations Cause Concern in Putumayo", EL COMERCIO (Quito, 10 Nov. 2002). ER, Vol. IV, Annex 73; "Glyphosate Rain", EL TIEMPO (Bogotá, 25 Feb. 2003). ER, Vol. IV, Annex 74; "Between Faith and Fumigations", EL TIEMPO (Bogotá, 10 May 2002). ER, Vol. IV, Annex 66; "Spray Program on Indigenous Territories Is Struggling", EL TIEMPO (Bogotá, 28 Apr. 2003). ER, Vol. IV, Annex 75.

[1012] *Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, Mr. Rodolfo Stavenhagen*, Mission to Colombia U.N. Doc. E/CN.4/2005/88/Add.2, para. 50 (10 Nov. 2004). ER, Vol. IV, Annex 102; *see also ibid*., para. 82. ER, Vol. IV, Annex 102. Mr. Stavenhagen reported that the Awa had been particularly affected: "The Awá community in Nariño has informed the Special Rapporteur of various kinds of damage caused over the last three years to large tracts of rainforest in several areas of the municipalities of Tumaco and Barbacoas, as a result of spraying with glyphosate. The greatest damage was done, they say, to sources of fresh water, killing native fish and affecting human health, causing aching bones, vomiting, dizziness, fever and other ailments, particularly among children." *Ibid.*, para. 51. ER, Vol. IV, Annex 102.

effects[1013]. Such adverse effects include the inducing of fear and apprehension, and on occasion even panic, in sectors of the Ecuadorian population, just as fear and apprehension and panic are induced in elements of the Colombian population[1014] (and also in the generation of a very large number of compensation claims in Colombia)[1015]. It is these consequences that contribute to the violation by Colombia of Ecuador's sovereignty: in accordance with general international law, and the 1988 Narcotics Convention, Colombia has an obligation to respect the territorial integrity and sovereignty of Ecuador, and it has failed to do so. The deposit of toxic substances is not insignificant, giving rise to a distinct violation of Colombia's international legal obligations, consistent with the approach taken in numerous judgments of the Court. Colombia has made no effort to provide any response to those authorities. It has not sought to distinguish them or argue that they were wrongly decided. It simply chooses to ignore them.

5.7 There is no need to recall in great detail the factual and legal arguments made by Ecuador in its *Memorial*: these are largely uncontested by Colombia. This chapter focuses on the two issues raised by Colombia. The first concerns Colombia's response to the very notion that an obligation to respect sovereignty

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[1013] *See supra* Chap. 2, paras. 2.199-2.202; Durham K. Giles, Ph.D., *Spray Drift Modeling of Conditions of Application for Coca Crops in Colombia*, pp. 47-48 (Jan. 2011). ER, Vol. II, Annex 2; Stephen C. Weller, Ph.D., *Glyphosate-Based Herbicides and Potential for Damage to Non-Target Plants Under Conditions of Application in Colombia*, pp. 17-21, 25 (Jan. 2011). ER, Vol. II, Annex 3.

[1014] *See, e.g.*, *supra* Chap. 3, paras. 3.18, 3.21, 3.158-3.166.

[1015] *See supra* Chap. 3, paras. 3.170-3.173.

adds in any way to the obligation to prevent transboundary harm; the second concerns Colombia's arguments on unauthorised overflights by Colombian aircraft of Ecuadorian territory.

5.8 As recognised by this Court in the *Corfu Channel* case, "[b]etween independent States, respect for territorial sovereignty is an essential foundation of international relations"[1016]. This obligation, and its corresponding duty to not intervene in the internal and external affairs of other States, is part and parcel of customary international law[1017]. It has been recognized in numerous international instruments, such as General Assembly Resolution 2625 (XXV) on the Declaration of Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations[1018], and the Montevideo Convention on the Rights and Duties of States[1019].

[1016] *Corfu Channel (United Kingdom v. Albania)*, *Judgment, I.C.J. Reports 1949*, p. 35.

[1017] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America), Judgment, I.C.J. Reports 1986*, p. 14, paras. 202, 292 (5).

[1018] United Nations General Assembly Resolution 2625 (XXV) Declaration of Principles of International Law concerning Friendly Relations and Cooperation among States in accordance with the Charter of the United Nations (24 Oct. 1970).

[1019] Montevideo Convention on the Rights and Duties of States, Art. 8 (26 Dec. 1933), entered into force 26 Dec. 1934, OAS Treaty Series No. 37, *available at* http://www.oas.org/juridico/english/sigs/a-40.html. Both Ecuador and Colombia are parties to the Convention.

5.9 Of particular relevance to this case is Article 2 of the 1988 Narcotics Convention, which provides:

> "2. The Parties shall carry out their obligations under this Convention in a manner consistent with the principles of sovereign equality and territorial integrity of States and that of non-intervention in the domestic affairs of other States" [1020].

Colombia argues in its *Counter-Memorial* that the principles stated in Article 2 of this Convention "do not have the effect of imposing any additional substantive obligations on the States Parties to the 1988 Convention"[1021]. Implicitly, therefore, Colombia recognizes that the obligation to respect Ecuador's territorial integrity arises under general international law, and that Article 2(2) merely reflects and underscores that legal obligation. In short, general international law and Article 2 of the 1988 Narcotics Convention impose upon Colombia a clear obligation to respect the principles of territorial integrity and non-intervention in respect of Ecuador. By causing and allowing toxic sprays to cross into the territory of Ecuador, Colombia is violating these obligations, which exist under conventional and customary law. Colombia accepts that exposure to glyphosate has a "toxicity to humans and animals", even if it is asserted to be "minimal", and that it causes "minor irritation"[1022] (for the avoidance of doubt, Ecuador does not accept as a matter of international law that even the most minor of "irritations" is

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[1020] United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, Art. 2, U.N. Doc. E/CONF.82/15 (20 Dec. 1988), reprinted in 28 I.L.M. 493 (1989) (hereinafter "1988 Narcotics Convention"). EM, Vol. II, Annex 3.

[1021] CCM, Chap. 8, para. 8.33.

[1022] CCM, Chap. 8, para. 8.39.

acceptable, and actions giving rise to such "irritations" constitute harm that is to be prohibited). Ecuador's right to territorial sovereignty encompasses a right that its people – as well as animals found on its territory – should not be subject to exposure to such "toxicity" or "irritation", the consequences are neither tolerable nor insignificant, and it cannot be the position of Colombia that it would tolerate such consequences in a reverse scenario. This is all the more so having regard to the consequences of the herbicide on plant life and on biodiversity, a matter on which Colombia retains a conspicuous silence.

5.10 The obligation to respect a State's territorial sovereignty involves not only the duty for other States to not intervene in the internal affairs of other States, but the exclusive right to display the activities of a State. This was recognised in the arbitral decision in the *Island of Palmas* case[1023], and by this Court in the case concerning *Military and Paramilitary Activities in and against Nicaragua*[1024]. The Court, when addressing the content of the principle of non-intervention, noted:

> "in view of the generally accepted formulations, the principle forbids all States or groups of States to intervene directly or indirectly in internal or external affairs of other States. A prohibited intervention must accordingly be one bearing on matters in which each State is permitted, by the principle of State sovereignty, to decide freely. One of these is the choice of a

[1023] *Island of Palmas Case (Netherlands v. United States of America)*, *Reports of International Arbitral Awards*, *Vol. II*, p. 839 (1928).

[1024] *Military and Paramilitary Activities (Nicaragua v. United States), Judgment, I.C.J. Reports 1986*, p. 108, para. 205.

> political, economic, social and cultural system, and the formulation of foreign policy"[1025].

To this formulation may be added the violation of environmental and health standards that Ecuador has adopted, as well as international environmental norms and those relating to the protection of fundamental human rights and the rights of indigenous peoples, including those set forth in ILO Convention No. 169. In addition, Ecuador invokes the right of all its citizens and all persons living within its territory not to be subject to exposure to toxic chemicals that cause any degree of harm.

5.11 The exercise of sovereignty by Ecuador inevitably includes the right to exercise permanent sovereignty over the natural resources that are to be found within its territory. As Ecuador made clear in its *Memorial*, the principle of permanent sovereignty over natural resources is recognised in numerous instruments of international law[1026] and has been confirmed by the Court to be "a principle of customary international law"[1027].

5.12 The principle of permanent sovereignty over natural resources has received special recognition in the context of environmental policy through its formulation provided for the first time in Principle 21 of the 1972 Stockholm

[1025] *Ibid.*

[1026] EM, Chap. 7, para. 7.14.

[1027] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, I.C.J. Reports 2005*, p. 251, para. 244.

Declaration on the Human Environment, which asserts that States have "the sovereign right to exploit their own resources pursuant to their own environmental policies"[1028]. The principle is also reflected in Article 7(4) of ILO Convention No. 169, which provides that "Governments shall take measures, in co-operation with the peoples concerned, to protect and preserve the environment of the territories they inhabit"[1029]. Principle 21 establishes as the sole limitation of this sovereign right the duty to respect the principles of international law and to not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction[1030]. The 1992 Convention on Biological Diversity, binding upon Ecuador and Colombia, incorporates Principle 21 of the Stockholm Declaration as a legal obligation of States in its Article 3[1031]. Colombia does not dispute the content or legal status of these obligations.

5.13 In the same manner that States have the right to freely determine their "choice of a political, economic, social and cultural system, and the formulation of foreign policy"[1032], they have the right to freely determine their own standards for the protection of the environment and the well-being of their population.

[1028] Declaration of the United Nations Conference on the Human Environment, U.N. Doc. A/CONF/48/14/REV.1 (1972) (hereinafter "Stockholm Declaration").

[1029] ILO Convention 169, Art. 7(4).

[1030] Stockholm Declaration, Principle 21.

[1031] Convention on Biological Diversity, Art. 3 (22 May 1992), entered into force on 29 Dec. 1993. Colombia and Ecuador are parties to this Convention.

[1032] *Military and Paramilitary Activities (Nicaragua v. United States), Judgment, I.C.J. Reports 1986*, p. 108, para. 205.

Ecuador is entitled as a matter of domestic law to prohibit aerial spraying of pesticides in the manner now engaged in by Colombia, and it is entitled to hold Colombia to a standard that prohibits that State from allowing activities which will lead to the transboundary movement of pesticides from Colombia to Ecuador, in circumstances that even Colombia accepts will expose the people to toxic risks and consequent "irritation". In the same manner that Ecuador has the sovereign right to close its ports or its airspace if it so wishes, with due regard to international law, a State has the sovereign right to apply higher standards of environmental protection than its neighbouring countries and to be respected, free of foreign intervention, in doing so.

5.14 Colombia seeks to trivialise Ecuador's claim by portraying it as though Ecuador were demanding the absolute freedom of its territory from any trace of Colombian activity. This is not Ecuador's case. As Colombia is well aware, Ecuador's action is prompted by the severity of the environmental and human consequences suffered in its territory as a result of Colombia's uncontrolled – or inadequately controlled – activities. It is inappropriate for Colombia to invoke a need to reconcile "conflicting interests" by reference to considerations of "reasonableness and proportionality"[1033]: Colombia has failed to respect the basic principles of international cooperation and of due diligence with respect to transboundary harm, as explained by Ecuador in Chapter 8 of its *Memorial* and

[1033] CCM, Chap. 8, para. 8.35.

Chapter 6 of its *Reply*. It is equally inappropriate for Colombia to apply its internal laws and standards to the territory of Ecuador, or to accept that as a matter of international law it is entitled to do so. If Colombia had provided adequate information, if it had cooperated with Ecuador, if it had carried out a proper transboundary environmental impact assessment (and a proper and complete "Environmental Management Plan"), and if it had properly regulated the spray flights (including, *inter alia*, by gathering and sharing proper flight data and carrying out a proper and complete spray drift study), then it might be in a better position to argue that it had not violated Ecuador's sovereignty. But having done none of these things, and having manifestly failed to provide an accurate and complete account of its acts, Colombia has disabled itself from claiming that its actions have respected Ecuador's sovereignty.

5.15 Finally, in its *Counter-Memorial*, Colombia dismisses Ecuador's claim of violation of its territorial sovereignty as a result of transboundary harm to the Ecuadorian people and environment by claiming that "[t]o describe the causing of such harm as a breach of sovereignty does nothing to further the analysis"[1034]. For the reasons set out above, this is wrong: the duty to respect a State's sovereignty is a fundamental obligation of international law, and it is independent from other international obligations and provides grounds for a specific cause of

[1034] CCM, Chap. 8, para. 8.32.

action in international law[1035]. Its violation does not depend on proving the same degree of harm as, for example, violations of fundamental human rights or damage to the environment. Even if Colombia's dismissive portrayal of the spray's harms were true, which they are not, minor irritations caused to a large number of people in Ecuador, over extended periods of time and as a consequence of the use of a pesticide that is prohibited from being used by aerial spraying around the world, gives rise to a violation of a State's sovereignty. The Court has recognised this principle in numerous judgments, declaring the violation of sovereignty to be a distinct violation of international law, even when it is a consequence of acts which result in the violation of other or additional international obligations[1036].

5.16 Considering the brevity with which Colombia addresses in its *Counter-Memorial* Ecuador's claims of violation of its territorial sovereignty and integrity, it has presented a notably lengthy response to Ecuador's reference to the pertinent allegations made by Australia and New Zealand in the *Nuclear Tests* cases. Colombia compares the situation of transboundary harm resulting from French nuclear tests with that arising from the transboundary movement of pesticides in the present case:

[1035] EM, Chap. 7, para. 7.7.

[1036] *See, e.g.*, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, I.C.J. Reports 2005*, p. 227, para. 165.

> "In any event the *Nuclear Tests* cases concerned long-distance radioactive fallout from atmospheric nuclear testing, a very different proposition than incidental and marginal spray drift from lawful activities in the fight against illicit drugs. There are many uncertainties about the effects of radioactivity, and no 'safe' dose. The radioactive elements concerned have a long half-life and the illnesses they appear to cause (the chain of causation is undetectable and unpreventable) are initially difficult to detect and expensive to treat"[1037].

Colombia seems to be arguing that allegations of a violation of sovereignty causing greater environmental harm would be more capable of being sustained in the circumstances of the *Nuclear Tests* cases than in those of the present dispute. This misses the point. Colombia accepts that the intrusion into the territory of a State of a harmful substance can and does give rise to a violation of the obligation to respect the sovereignty of a State. That is the key point. The distinction between the consequences of radionuclides and the spray's pesticide mixture is one of degree, if it is anything, but it is not one of principle. There are many uncertainties about the effects of the pesticides used by Colombia, and that is precisely why their use is strictly controlled and why aerial spraying of pesticides is banned in the European Union and elsewhere. In these circumstances, by allowing such pesticides to be transported into the territory of Ecuador, Colombia is failing to respect Ecuador's sovereignty.

5.17 Colombia does not dispute that overflight of Ecuadorian territory by aircraft involved in the aerial spraying would, in the absence of a treaty or other

[1037] CCM, Chap. 8, para. 8.39.

consensual arrangement, violate the sovereignty of Ecuador. This is a concession that Ecuador accepts[1038]. Colombia argues, however, that Ecuador has not given any "particularised examples of overflight", and for this reason there has been no violation[1039]. Ecuador is now in a position to provide the particularised examples that Colombia refers to: in Chapter 2, there is set out the aerial spraying incidents giving rise to violations of Ecuadorian sovereignty[1040]. Ecuador recognises that the number of overflights is small, but that does not diminish the significance of the issue of principle: having regard to the likelihood of further violations, Ecuador considers that there is a need for the Court to make clear that Colombia is under a strict duty to prevent any overflights of the territory of Ecuador that have not been authorised.

[1038] CCM, Chap. 8, para. 8.42.

[1039] CCM, Chap. 8, para. 8.43.

[1040] *See supra* Chap. 2, para. 2.163, n. 320.

CHAPTER 6.

VIOLATION OF INTERNATIONAL ENVIRONMENTAL LAW AND RESPONSIBILITY FOR TRANSBOUNDARY HARM

Section I. Introduction

6.1 In its *Memorial*, Ecuador set forth detailed arguments with respect to Colombia's violation of its international obligations on prevention of transboundary harm, environmental impact assessment and cooperation, and the need for a precautionary approach. In its *Counter-Memorial*, Colombia tries to evade its responsibility for causing transboundary harm by portraying the spray programme as harmless and benign. Ecuador reiterates the arguments it made in the *Memorial*, and responds in this *Reply* to Colombia's arguments. Chapter 2 of this *Reply* shows that Colombia has misrepresented the toxicity of the glyphosate-based formulations used in the aerial spray programme. Diplomatic correspondence with Ecuador and official U.S. and Colombian reports reveal that the spray mixture contained chemicals that Colombia omitted to refer to in its description. Various formulations of glyphosate with quite different characteristics have been used at various times, in combination with other chemicals. Given Colombia's failure to provide a complete account or description, and the ensuing uncertainty, it is impossible for Ecuador or the Court to assess fully the risks posed by the chemicals used in the spray. It is clear, however, that the spray mixture is toxic and significantly harmful to humans. The nature and scale of Colombia's spraying, as shown in Chapter 2, magnifies the problem for communities living near the border with Colombia.

6.2 Colombia argues that Ecuador has not proved significant harm. Chapter 3 of this *Reply* sets out further evidence of harm to people, crops, water supplies, natural resources and the environment – all in Ecuador – resulting from Colombia's aerial spraying programme[1041]. That evidence need not be repeated here: it shows that aerial spraying along the border caused significant harm in Ecuador prior to 2007, when Colombia ceased spraying within a 10 kilometre buffer zone, and that further harm could be caused in the future if spraying closer to Ecuador were resumed.

6.3 In its *Counter-Memorial*, Colombia claims that it had, at most, an obligation to conduct an environmental impact assessment under the terms of the applicable Colombian law and to keep the situation under review[1042]. It argues that the aerial spraying programme was adopted and implemented with all due diligence[1043]. And it denies that it failed to cooperate with Ecuador in the implementation of the aerial spraying programme[1044].

6.4 Ecuador disagrees. Its detailed response is set out in subsequent sections of this Chapter. In summary:

[1041] *See supra* Chap. 3, Section I.

[1042] Counter-Memorial of Colombia, Vol. I, Chap. 8, paras. 8.89-8.90 (29 Mar. 2010) (hereinafter "CCM").

[1043] *Ibid.*, Chap. 8, para. 8.60.

[1044] *Ibid.*, Chap. 8, paras. 8.105-8.112.

a. Given the risk of toxic herbicide drifting into Ecuador and causing harm, there was a duty under international law to carry out a prior environmental impact assessment of transboundary effects.

b. Colombia did not carry out such an assessment before the spraying operation was initiated.

c. Colombia's aerial spraying caused significant harm to people, property and the environment in Ecuador and there remains a risk of further harm if the spraying is resumed within 10 kilometres of the border.

d. Given the large scale of the spraying operations, and the uncertain composition and effects of the chemicals in use, a heightened duty of due diligence is called for, requiring a precautionary approach to prevention of harm.

e. Colombia failed to exercise due diligence in authorising and supervising the spraying activities, *inter alia*, by:

- allowing the use of inappropriate chemicals[1045];
- failing to ensure that spray planes operate at a speed and height that will prevent spray drift[1046];

[1045] *See supra* Chap. 2, paras. 2.17-2.64.

[1046] *See supra* Chap. 2, paras. 2.88-2.107.

- permitting inappropriate aircraft to be utilised[1047];
- allowing night spraying[1048];
- paying insufficient attention to meteorological conditions, including temperature, humidity and wind conditions[1049];
- permitting an excessive rate of application having regard to the areas being sprayed[1050];
- failing to ensure compliance by spray planes with the Environmental Management Plan ("EMP")[1051];
- failing to give warning when spray operations were scheduled to take place in border areas[1052];
- failing to monitor the harmful effects of spraying[1053].

f. Colombia has not cooperated with Ecuador in good faith as required by customary international law, the 1988 Narcotics Convention, and the 1992 UN Convention on Biological Diversity. Specifically, it has failed to:

- consult Ecuador before initiating the border spraying programme;
- notify Ecuador of the composition of the spray mixture and of planned spraying operations;
- undertake joint monitoring of the impact of the spraying operation.

[1047] *See supra* Chap. 2, paras. 2.115-2.122.

[1048] *See supra* Chap. 2, paras. 2.145-2.149.

[1049] *See supra* Chap. 2, paras. 2.151-2.154.

[1050] *See supra* Chap. 2, paras. 2.140-2.143.

[1051] *See supra* Chap. 2, paras. 2.67-.2.73.

[1052] *See supra* Chap. 3, paras. 3.7, 3.99, 3.141; Memorial of Ecuador, Vol. I, Chap. 3, paras. 3.-3.3, 3.17, 3.21, 3.25, 3.46 (28 Apr. 2009) (hereinafter "EM").

[1053] *See infra* paras. 6.45-6.71.

g. Finally, Colombia has not answered the need for adequate precautionary measures to deal with the ongoing risk of significant harm to Ecuador should the spraying programme along the border ever resume.

6.5 However expressed, the central point of this part of the case is clear and unambiguous: Ecuador is entitled in international law to expect Colombia to carry out its spraying programme in a manner which assesses all the risks to Ecuador and takes all necessary steps to prevent avoidable transboundary harm from occurring. In Ecuador's submission that means no spraying in border areas in circumstances where significant harm to Ecuador or its people, property or environment is likely to result. Only since 2007, when Colombia stopped spraying within 10 kilometres of the border, has the problem of herbicide deposition in Ecuador been tackled effectively; as regards the future, Colombia's halt to the programme does not address past illegalities, with their continuing consequences. This simple fact shows that it is possible for Colombia to carry out its spraying programme without the need to spray in close proximity to the border. What Ecuador seeks now is a binding obligation on Colombia not to resume spraying within 10 kilometres of the border.

Section II. The Applicable Law

A. GENERAL INTERNATIONAL LAW

6.6 Colombia has a particularly narrow and conservative view of the applicable law. The Parties differ markedly on this issue. Ecuador's views as set out in the *Memorial* and in this Chapter are grounded in principle and established practise. They adopt and apply the Judgment of this Court in the *Pulp Mills Case*[1054]. The significance of that Judgment for the present case is addressed below.

6.7 Colombia argues that international environmental law is mainly treaty-based, and that "[s]uch customary international law rules as exist in relation to the environment are of a general and residual character"[1055]. It appears to deny the existence of any relevant norms of customary international law apart from the general duty of due diligence referred to in the Court's *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons*[1056]. Specifically, it disputes the existence of a requirement to carry out a prior environmental impact assessment as to transboundary effects, or to ensure that members of the public in Ecuador

[1054] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*.

[1055] CCM, Chap. 8, para. 8.6.

[1056] *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, I.C.J. Reports 1996*, pp. 241-242, para. 29.

who are potentially affected by the spray are informed in advance[1057]. It discounts the articles of the International Law Commission ("ILC") with respect to prevention of transboundary harm, saying that they do not reflect customary international law, and in any event, do not apply because the threshold criterion of a likelihood of significant harm is not met[1058]. It denies that the precautionary principle has more than "adjectival" significance[1059].

6.8 Ecuador's arguments with respect to violation of the law on transboundary harm were fully elaborated in the *Memorial*[1060]. As shown later in this Chapter, Ecuador's case on environmental assessment requires the Court to do no more than apply the general law as set out in the *Pulp Mills* case[1061]. No treaty applicable between the Parties is required to substantiate Ecuador's arguments in this respect, nor does Ecuador seek to "incorporate" an indeterminate range of otherwise inapplicable environmental treaties via Article 14 of the 1988 Narcotics Convention, as Colombia alleges[1062]. Ecuador does not accept Colombia's argument that the 1988 Narcotics Convention is either the principal source of applicable law or that it functions as a *lex specialis*, displacing customary law and

[1057] CCM, Chap. 8, paras. 8.67-8.88, 8.95-8.100.

[1058] *Ibid.*, Chap. 8, para. 8.122(2).

[1059] *Ibid.*, Chap. 8, para. 8. 57.

[1060] EM, Vol. I, Chap. 5.

[1061] *See infra* Chap. 6, paras. 6.29-6.35. *See also Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, especially paras. 101, 187, 197, 204-205.

[1062] CCM, Chap. 8, para. 8.18.

other applicable treaties. While Ecuador relies on the 1988 Narcotics Convention as an additional basis for applying general international law on transboundary harm and applicable human rights treaties, it is not dependent on that Convention to make its case. The Court has jurisdiction to apply general international law and applicable treaties in this dispute, and Ecuador invites it to do so[1063].

B. THE 1988 UN CONVENTION ON NARCOTIC DRUGS

6.9 Colombia relies upon Articles 14, 24 and 25 of the 1988 Narcotics Convention as applicable law[1064]. Colombia claims that it has strictly complied with all applicable treaties, but it cites in addition to the 1988 Narcotics Convention only the 1992 Biological Diversity Convention[1065]. Other treaties referred to by Ecuador are dismissed as inapplicable between the Parties[1066], which misses the point that they may also be evidence of customary international law or provide guidance in the interpretation of treaties which are applicable between the Parties, including the 1988 Narcotics Convention. Colombia claims to recognise the need to take account of human rights and the environment when implementing the 1988 Narcotics Convention. It refers to the Declaration it made on ratification and says that "Colombia's concern in making that declaration was,

[1063] EM, Chap. 4.

[1064] CCM, Chap. 9, para. 9.1.

[1065] *Ibid.*

[1066] CCM, Chap. 8, para. 8.8.

inter alia, to maintain a balance between criminalisation of coca cultivation and a 'policy of alternative development, taking into account the rights of indigenous communities involved and the protection of the environment'"[1067].

6.10 Colombia nevertheless argues that the 1988 Narcotics Convention functions as a *lex specialis* excluding other rules of general international law relating to the environment or human rights[1068]. Ecuador cannot accept this argument, which misconceives the function of *lex specialis* rules and the character of the 1988 Narcotics Convention. The 1988 Narcotics Convention is not a self-contained regime governing all aspects of relations between the Parties with regard to drug eradication. To so hold would eviscerate the application of other general rules of law between the Parties in a manner inconsistent with the concept of a *lex specialis* and the proper interpretation of the 1988 Narcotics Convention. In the present case, Ecuador submits that the correct approach, in accordance with the wording in the 1988 Narcotics Convention, is to apply both the Convention and other applicable rules and principles of international law not incompatible with it.

6.11 Ecuador's approach conforms to the treatment of *lex specialis* regimes by the ILC and in decisions of this Court. As the ILC pointed out in its Report on the

[1067] *Ibid.*, Chap. 8, para. 8.17.

[1068] *Ibid.*, Chap. 8, paras. 8.13-8.18.

Fragmentation of International Law, a rule may be "special" in various ways, either because it is a more specific application of a general rule, or because it modifies or sets aside the general rule[1069]. It does not necessarily follow, as Colombia asserts in this case, that other more general rules are excluded or trumped by a *lex specialis*. More usually, a *lex specialis* enables a court to locate a specific rule or body of law within a broader set of rules whose content will influence the interpretation and application of the *lex specialis*[1070]. Ecuador submits that this view of the relationship between special and general rules applies aptly in the circumstances of the present case. As the ILC Study Group notes, "preference was often given to a special standard because it not only best reflects the requirements of the context, but because it best reflected the intent of those who were to be bound by it"[1071]. From this perspective, the *lex specialis* doctrine is essentially a technique for interpreting and applying treaties. In Ecuador's view, explained in more detail below, that view seems more consistent

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[1069] United Nations General Assembly, International Law Commission, *Fragmentation of International Law: Difficulties Arising From the Diversification and Expansion of International Law*, Report of the Study Group of the International Law Commission, para. 88, U.N. Doc. A/CN.4/L.682 (13 Apr. 2006).

[1070] *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997*, para. 132; *Amoco International Finance Corp. v. Iran, US-Iran CTR 189*, para. 112 (1987); *Ambatielos Case (Greece v. United Kingdom), Preliminary Objections Judgment, I.C.J. Reports 1952*, p. 44; *Southern Bluefin Tuna Cases, Provisional Measures, Judgment, ITLOS,* Nos. 3-4 (2000). *See generally* Joost Pauwelyn, *Conflict of Norms in Public International Law* 385-416 (Cambridge, 2003).

[1071] United Nations General Assembly, International Law Commission, *Report of the Study Group on Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, para. 12, U.N. Doc. A/CN.4/L.663 Rev.1 (28 July 2004).

with the ordinary meaning of Article 14(2) of the 1988 Narcotics Convention, a provision which Colombia reduces to insignificance in its reading of the text.

6.12 Article 14(2) does not set out special rules on human rights or environmental protection. Rather, it makes only a general reference to the existing law on those subjects, and thus serves to place an explicit limit on the application of the 1988 Narcotics Convention, including Articles 24 and 25. While in theory there may be circumstances in which the 1988 Narcotics Convention modifies the law on transboundary harm if necessary to give effect to its object and purpose, that is far from being the case here. It is neither necessary nor reasonable to cause transboundary harm in Ecuador in order to facilitate measures aimed at eradicating illegal drug crops or to give effect to what is in substance a treaty on law enforcement cooperation.

6.13 Ecuador's view of *lex specialis* regimes does not differ from that taken by the Court. Ecuador invokes the *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons*[1072]. In that case, treaties and customary law relating to the use of force, international humanitarian law, human rights law, and international environmental law were relied on by various parties to the proceedings. The Court did not decide the case on the basis of any one of these

[1072] *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*, p. 240, para. 25.

bodies of law exclusively, even if it did recognize the particular significance of the *jus in bello*. Rather, it accepted that in the appropriate context the use of nuclear weapons might engage some or all of the rules in question. Thus, human rights law continued to apply in wartime, but "the test of what is an arbitrary deprivation of life . . . falls to be determined by the applicable *lex specialis*, namely the law applicable in armed conflict which is designed to regulate the conduct of hostilities"[1073]. Similarly, environmental obligations continued to apply during an armed conflict and were relevant to assessing whether a particular use of force was necessary and proportionate but, the Court "did not consider that [environmental treaties] could have been intended to deprive a State of the exercise of its right of self-defence"[1074].

6.14 In the present case, Ecuador does not seek to deprive Colombia of its right to implement drug eradication programmes consistent with the 1988 Narcotics Convention, but it does insist that this Convention cannot and need not be interpreted so as to deny Ecuador all protection from transboundary harm, as Colombia appears to argue. Ecuador's fundamental point is that drug crop eradication can proceed effectively pursuant to the 1988 Narcotics Convention without causing significant transboundary harm to Ecuador. When such harm occurs or is at risk of occurring, its legality must then be judged in accordance

[1073] *Ibid.*, p. 240, para. 25.

[1074] *Ibid.*, p. 242, para. 30.

with the applicable rules of general international law on the environment and human rights, as explicitly envisaged by Article 14(2) of the 1988 Narcotics Convention.

6.15 Colombia recognizes the limits of its own argument. It accepts that "[t]he natural interpretation of Article 14(2) is that general respect for human rights and the environment is called for in the context of the required eradication measures"[1075]. This is a concession that Ecuador is pleased to take. Yet, Colombia does not say what it means by "general respect". Later in the *Counter-Memorial*, it again notes that Article 14(2) of the Convention requires the Parties to take "due account of . . . the protection of the environment"[1076]. It then says that "this is subsumed under the general international law relating to transboundary harm; *a State which exercises due diligence in accordance with the international law standard will thereby respect the protection of the environment*"[1077]. That is precisely Ecuador's point: Colombia accepts that in relation to the environment, Article 14(2) requires the Parties, *inter alia*, to apply the applicable international law standard of due diligence. It follows inexorably from the logic of Colombia's own admission that a State that does *not* exercise due diligence in accordance with the international law standard will thereby fail

[1075] CCM, Chap. 8, para. 8.18.

[1076] *Ibid.*, Chap. 8, para. 8.119.

[1077] *Ibid.*

to "respect the protection of the environment" and thus be in breach of Article 14(2) of the 1988 Narcotics Convention. That argument was fully developed by Ecuador in its *Memorial*[1078], and is fully maintained.

6.16 Even if, *arguendo*, Ecuador is wrong in treating Article 14(2) as creating a cause of action, it still follows that a State that does not exercise due diligence in accordance with Article 14(2) will not be entitled to rely on the 1988 Narcotics Convention as a defence to an alleged violation of customary international law on transboundary harm. Colombia must exercise its powers with respect to drug eradication on its territory in conformity with applicable international law on transboundary harm and human rights[1079]. Colombia's only answer to that argument is to rely on Articles 24 and 25 of the 1988 Narcotics Convention. To recall, these Articles provide:

> "Article 24: A Party may adopt more strict or severe measures than those provided by this Convention if, in its opinion, such measures are desirable or necessary for the prevention or suppression of illicit traffic.
>
> "Article 25: The provisions of this Convention shall not derogate from any rights enjoyed or obligations undertaken by Parties to this Convention under the 1961 Convention, the 1961 Convention as amended and the 1971 Convention".

6.17 According to Colombia, neither Article 24 nor the 1961 Convention on Narcotic Drugs or the 1971 Convention on Psychotropic Substances contain any

[1078] EM, Chap. 8, paras. 8.24-8.37.

[1079] *See* 1988 UN Convention on Narcotic Drugs, Arts. 2 and 14.

provision "even arguably" incorporating human rights, indigenous rights or environmental obligations[1080]. It goes on to assert that "[a] State accused of disregard for those obligations in taking some measure could simply say that it did so pursuant to the permission in Article 24, or the saving clause in Article 25"[1081]. Colombia then invokes reliance on both provisions[1082].

6.18 It is implicit in Colombia's argument that Articles 24 and 25 override Article 14, and indeed every other article of the 1988 Narcotics Convention. Ecuador does not accept Colombia's interpretation of Articles 24 and 25. To do so would give every individual party to that convention *carte blanche* to disregard international human rights law and international environmental law, if in its opinion, it were desirable to do so in order to prevent or suppress traffic in illicit narcotics. Indeed, it would give a party to the Convention the right to override any inconvenient part of international law. Presumably, if, in Colombia's opinion, it were necessary or desirable to spray toxic herbicides over Quito in order to suppress illicit narcotics traffic, then Colombia would have a good defence under Articles 24 and 25. Colombia's reading of these articles is not consistent with the object and purpose of the Convention, nor with the ordinary meaning of the text.

[1080] CCM, Chap. 8, para, 8.13.

[1081] *Ibid.*

[1082] *Ibid.*

6.19 First, it needs to be recalled that according to Article 2, the object and purpose of the 1988 Narcotics Convention is to promote cooperation between States parties. It would be strange indeed if a convention on cooperation were to be construed as empowering one State unilaterally to violate the rights of other parties. Nothing in Article 2 supports such an interpretation. Article 2 provides:

> "1. The purpose of this Convention is to promote co-operation among the Parties so that they may address more effectively the various aspects of illicit traffic in narcotic drugs and psychotropic substances having an international dimension. In carrying out their obligations under the Convention, the Parties shall take necessary measures, including legislative and administrative measures, *in conformity with the fundamental provisions of their respective domestic legislative systems*.
>
> 2. The Parties shall carry out their obligations under this Convention in a manner consistent with the principles of sovereign equality and territorial integrity of States and that of non-intervention in the domestic affairs of other States.
>
> 3. A Party shall *not* undertake in the territory of another Party the *exercise of jurisdiction and performance of functions* which are exclusively reserved for the authorities of that other Party by its domestic law". (emphasis added).

6.20 Quite apart from the express reference to human rights and environmental protection in Article 14, the text of Article 2 as highlighted above presupposes at least three limits on the measures that may be taken to address illicit traffic more effectively: conformity with fundamental provisions of national law (including presumably constitutional protection of human rights and the environment); consistency with sovereign equality, territorial integrity and non-intervention; and non-exercise of jurisdictional functions reserved to other States. On a plain

reading of the text, any measures adopted under Article 24 remain subject to the limitations imposed by Article 2. The second of those limitations applies to the present case: causing transboundary harm to Ecuador by spraying herbicides in border areas is inconsistent with sovereign equality, respect for the territorial integrity of Ecuador, and non-intervention in its domestic affairs[1083]. On that reading, Article 24 does not give Colombia "permission" to derogate from its environmental obligations towards Ecuador, any more than it would sanction human rights violations by Colombia in Ecuador. Article 2 thus reinforces the argument that Article 14 constrains the measures parties may take pursuant to the Convention, and requires them to respect the general law on human rights and the environment.

6.21 Second, it is also necessary to look more closely at the wording of Article 24. When it refers to a party adopting "more strict or severe measures than those provided by this Convention", the obvious intent is to allow parties to do more within their own domestic jurisdiction. In common with other law enforcement cooperation conventions, it provides a common minimum for action by all States parties, but allows individual States to go further if they wish[1084]. The UN

[1083] EM, Chap. 7.

[1084] Other examples include Article 34(3) of the United Nations Convention on Transnational Organised Crime, which provides: "Each State Party may adopt more strict or severe measures than those provided for by this Convention for preventing and combating transnational organized crime". U.N. Doc. A/55/383 (2000), reprinted in 40 I.L.M. 335 (2001). *See also* Article Art. 65(2) of the United Nations Convention Against Corruption, which provides: "Each State Party

Commentary to the 1988 Narcotics Convention gives the example of limitation periods for prosecution of offences, noting that "a party might provide instead that the prosecution of those offences would not be subject to any time-limit"[1085]. However, nothing in the Commentary to the 1988 Narcotics Convention or its predecessors of 1961 and 1971 suggests that the parties are thereby granted an open-ended permission to derogate from international law or violate the rights of other States, as Colombia appears to argue. The 1988 UN Commentary simply notes that "[i]n the previous commentaries, it was pointed out that the article permitted a party to adopt measures additional to those prescribed by the Convention or to replace them by stricter or more severe measures than those provided for in the Convention"[1086].

6.22 Consider the effect of Colombia's Article 24 argument if it were to be applied to Article 17 of the same Convention. That article deals with illicit traffic at sea[1087]. Article 17 sets out significant limits on the power of States parties to

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may adopt more strict or severe measures than those provided for by this Convention for preventing and combating corruption". U.N. Doc. A/58/422 (2003), 43 I.L.M. 37 (2004).

[1085] *Commentary on the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988*, p. 391, para. 24.3, U.N. Doc E/CN.7/590 (20 Dec.1988). ER, Vol. IV, Annex 94.

[1086] *Ibid.*

[1087] Article 17 provides:

ILLICIT TRAFFIC BY SEA

1. The Parties shall co-operate to the fullest extent possible to suppress illicit traffic by sea, in conformity with the international law of the sea.

interfere with navigation at sea or arrest of foreign vessels. It is intended to protect the rights of freedom of navigation "in conformity with the international

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2. A Party which has reasonable grounds to suspect that a vessel flying its flag or not displaying a flag or marks of registry is engaged in illicit traffic may request the assistance of other Parties in suppressing its use for that purpose. The Parties so requested shall render such assistance within the means available to them.

3. A Party which has reasonable grounds to suspect that a vessel exercising freedom of navigation in accordance with international law, and flying the flag or displaying marks of registry of another Party is engaged in illicit traffic may so notify the flag State, request confirmation of registry and, if confirmed, request authorization from the flag State to take appropriate measures in regard to that vessel.

4. In accordance with paragraph 3 or in accordance with treaties in force between them or in accordance with any agreement or arrangement otherwise reached between those Parties, the flag State may authorize the requesting State to, *inter alia*:

a) Board the vessel;

b) Search the vessel;

c) If evidence of involvement in illicit traffic is found, take appropriate action with respect to the vessel, persons and cargo on board.

5. Where action is taken pursuant to this article, the Parties concerned shall take due account of the need not to endanger the safety of life at sea, the security of the vessel and the cargo or to prejudice the commercial and legal interests of the flag State or any other interested State.

6. The flag State may, consistent with its obligations in paragraph 1 of this article, subject its authorization to conditions to be mutually agreed between it and the requesting Party, including conditions relating to responsibility.

7. For the purposes of paragraphs 3 and 4 of this article, a Party shall respond expeditiously to a request from another Party to determine whether a vessel that is flying its flag is entitled to do so, and to requests for authorization made pursuant to paragraph 3. At the time of becoming a Party to this Convention, each Party shall designate an authority or, when necessary, authorities to receive and respond to such requests. Such designation shall be notified through the Secretary-General to all other Parties within one month of the designation.

8. A Party which has taken any action in accordance with this article shall promptly inform the flag State concerned of the results of that action.

9. The Parties shall consider entering into bilateral or regional agreements or arrangements to carry out, or to enhance the effectiveness of, the provisions of this article.

10. Action pursuant to paragraph 4 of this article shall be carried out only by warships or military aircraft, or other ships or aircraft clearly marked and identifiable as being on government service and authorized to that effect.

11. Any action taken in accordance with this article shall take due account of the need not to interfere with or affect the rights and obligations and the exercise of jurisdiction of coastal States in accordance with the international law of the sea.

law of the sea", while enhancing the regime of enforcement through cooperation with the flag State. If Colombia's interpretation of Article 24 is correct, then any party may disregard the limitations recognized by Article 17 if in its opinion it is necessary or desirable to do so in order to suppress illicit drug traffic. If that is the intended effect of Article 24, then why did the parties agree to adopt Article 17[1088]?

6.23 Colombia's proposed reading of Article 24 lacks credibility and is implausible. Colombia cannot say that Article 24 overrides human rights and environmental protection obligations, but not the law of the sea, because nothing in the wording of the text would support such a distinction. If the rights of other States under the law of the sea are not overridden by Article 24, then the rights of other States under international environmental law and human rights law are also not overridden. These rights are expressly recognized in Articles 2 and 14. In Ecuador's submission, Article 24 can only be read as empowering States parties to do more domestically, not to override international law or violate the territorial sovereignty or rights of other States. Colombia remains bound by the limitations imposed by Articles 2 and 14, as well as by general international law in regard to the environment and human rights.

[1088] For the negotiating history of Article 17 (referred to as draft article 12) see *United Nations Conference for the Adoption of a Convention against Illicit Traffic in Narcotic Drugs: Official Records*, Vol. I, pp. 27-28, 154-158; Vol. II, pp. 267-274, 308-314 (Vienna, 1988). ER, Vol. IV, Annex 96.

6.24 Similar comments apply to Article 25 insofar as it preserves rights and obligations under the 1961 Convention on Narcotic Drugs and the 1971 Convention on Psychotropic Substances. Article 25 cannot have been intended to override international law or permit violations of the rights of other States. That much is clear from the text of the two earlier conventions.

6.25 Article 39 of the 1961 Convention as amended provides as follows:

> "Notwithstanding anything contained in this Convention, a Party shall not be, or be deemed to be, precluded from adopting measures of control more strict or severe than those provided by this Convention and in particular from requiring that preparations in Schedule III or drugs in Schedule II be subject to all or such of the measures of control applicable to drugs in Schedule I as in its opinion is necessary or desirable for the protection of the public health or welfare" [1089].

As in the case of Article 25 of the 1988 Narcotics Convention, the ordinary meaning of this provision is to preserve the freedom of parties to take additional domestic measures, not to derogate from international law.

6.26 Article 23 of the 1971 Convention provides: "[a] Party may adopt more strict or severe measures of control than those provided by this Convention if, in its opinion, such measures are desirable or necessary for the protection of the

[1089] United Nations Single Convention on Narcotic Drugs as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, Art. 39, 976 UNTS 3, reprinted in 11 I.L.M. 804 (1972).

public health and welfare"[1090]. This wording is identical to Article 24 of the 1988 Narcotics Convention. It does no more than that Article. Colombia's interpretation of Article 25 of the 1988 Narcotics Convention is thus as unsupported by the text and the object and purpose of the 1961 and 1971 Conventions as its interpretation of Article 24.

6.27 Simply preserving the rights of parties to the 1961 and 1971 Conventions can thus have no effect on their obligations towards other States under general international law. Those obligations are expressly preserved by Articles 2 and 14(2), and any relevant rules of international law applicable between the parties must be taken into account when interpreting and applying Articles 2, 14, 24 and 25 of the 1988 Narcotics Convention in accordance with Article 31(3)(c) of the 1969 Vienna Convention on the Law of Treaties. This would include customary international law on transboundary harm and environmental impact assessments ("EIA")[1091]. The same argument applies equally to applicable human rights treaties considered in the next Chapter.

[1090] United Nations Convention on Psychotropic Substances (1971), 1019 UNTS 175, reprinted in 10 I.L.M. 261 (1971).

[1091] *Iron Rhine Arbitration (Belgium/Netherlands)*, Arbitral Award, paras. 58-59 (2005); *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997*, pp. 77-78, paras 140-141; *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 60, para. 204.

6.28 In conclusion, whether under customary international law or Article 14(2), Colombia's obligations with respect to transboundary harm and EIA are not overridden by Articles 24 and 25 of the 1988 Narcotics Convention, and these articles provide no defence to Ecuador's case on harm or the risk of harm caused by aerial spraying of toxic herbicides, nor to its arguments with respect to EIA and cooperation. They also provide no defence to the human rights arguments made in the *Memorial* and in the next Chapter of this *Reply*[1092].

Section III. Failure to Carry Out a Prior Environmental Impact Assessment

A. Duty to Carry Out a Transboundary EIA

6.29 Given the obvious risk of significant transboundary harm posed by spraying toxic herbicides close to inhabited areas of Ecuador, it is indisputable that Colombia had an obligation in general international law to carry out a transboundary EIA before spraying near those areas commenced in 2000. Indeed, Colombia has not argued the contrary, and most of its discussion of earlier case-law has been shown to be without merit following the Court's 2010 Judgment in *Pulp Mills on the River Uruguay*. In that case, the Court held that prior assessment of transboundary impacts is not merely a treaty based obligation – as

[1092] EM, Chap. 9; *infra* Chap. 7.

Colombia maintains in its *Counter-Memorial* – but is a requirement of general international law:

> "In this sense, the obligation to protect and preserve, under Article 41 *(a)* of the Statute [of the River Uruguay], has to be interpreted in accordance with a practice, which in recent years has gained so much acceptance among States that *it may now be considered a requirement under general international law* to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, *due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised*, if a party planning works liable to affect the régime of the river or the quality of its waters *did not undertake an environmental impact assessment* on the potential effects of such works"[1093].

6.30 The Court also held that "an environmental impact assessment must be conducted *prior to the implementation of a project*. Moreover, once operations have started and, where necessary, throughout the life of the project, continuous monitoring of its effects on the environment shall be undertaken"[1094].

6.31 Colombia argues in its *Counter-Memorial* that "[a]t most, Colombia had to conduct an assessment, under the terms of the applicable Colombian law, as to whether its spraying program risked causing significant transboundary harm, and if so, what mitigation measures were appropriate"[1095]. Colombia's position is

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[1093] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 60, para. 204 (emphasis added).

[1094] *Ibid.,* p. 61, para. 205 (emphasis added).

[1095] CCM, Chap. 8, para. 8.89.

inconsistent with that of the Court in the *Pulp Mills* case. For Colombia, the obligation to conduct a prior assessment of transboundary impact arises, if at all, from its own law, not general international law. Yet that is not what the Court ruled in *Pulp Mills*.

6.32 Colombia then goes on to argue that it had no such obligation, because its 1993 Law on the Environment and the 1994 Regulatory Decree adopted under that law did not require prior environmental authorization for the application of pesticides already operating prior to that date[1096]. This is not a correct appreciation of its own law. As the Rojas Report makes clear, under Law 99 of 1993, the 1994 and all subsequent aerial spray programmes required an Environmental License, and thus an EIA:

> "[A] strict legal analysis of the laws and regulations in force at that time, can only lead to the conclusion that the spraying operations of 1994 and subsequent programs, due to their particularities and their scope, would have had to be distinguished from those previously authorized, and therefore would have had to submit to the regulatory regime of the Environmental License contained in Law 99 of 1993"[1097].

Yet, in Colombia's view, the 1993 law excludes the aerial spraying programme from its requirements because it had already begun before 1993. This is simply

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[1096] *Ibid.*, Chap. 4, paras. 4.10–4.11.

[1097] Claudia Rojas Quiñonez, Esq., *The Aerial Spray Program and Violations of Colombia's Domestic Laws Regarding the Environment and the Rights of Indigenous Peoples*, para. 72 (Jan. 2011) (hereinafter "Rojas Report"). ER, Vol. II, Annex 8. *See also* Letter from Cecilia Lopez Montano, Minister of Environment, Republic of Colombia, to Nestor Humberto Martinez Neira, Minister of Justice and Law, Republic of Colombia, p. 1 (20 Dec. 1994). ER, Vol. V, Annex 123.

wrong. In the first place, after *Pulp Mills*, it can no longer be argued that there is no obligation under general international law to conduct a transboundary EIA prior to commencement of the activity in question. Second, as set out at length in Chapter 4 of this *Reply*[1098], the argument is contradicted by Colombia's own Ministry of Environment, which for years demanded that the National Antinarcotics Agency ("DNE") carry out studies of the spray programme's environmental impacts. In 1999, the Ministry demanded that the DNE supply it with "information in relation to the analysis and determination of the conditions of exposure, whether the exposure was direct or indirect, and the possible cumulative impacts, the latter with the aim of re-establishing an environmental risk assessment for the spraying activities"[1099]. When the DNE finally responded, the Ministry of Environment concluded that the information given was insufficient to assess environmental risk[1100].

6.33 The Ministry of Environment ordered the DNE to "develop within a period of six months, for the areas affected by the spraying of glyphosate to eradicate illicit crops, evaluations of environmental impact" that would facilitate

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[1098] *See supra* Chap. 4, paras. 4.19-4.29, 4.48.

[1099] Republic of Colombia, Ministry of Environment, *Resolution No. 341, Adopting some decisions in relation to the Program for the Eradication of Illicit Crops by Aerial Spraying with Glyphosate,* p. 2 (2001) (hereinafter "Colombian Ministry of Environment, Resolution No. 341 of 2001"). EM, Vol. II, Annex 14.

[1100] *Ibid.*, pp. 4-6. *See also* Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

the development of mitigation and compensation measures[1101]. In late 2001, the Ministry of Environment was still requesting information that would allow for the characterisation of sprayed areas and a determination of risks, and further ordered the DNE to evaluate the toxicological risks associated with the chemicals used[1102]. The Ministry of Environment's futile efforts to require the DNE to assess the aerial spray programme's environmental impacts are set out in detail in Chapter 4 of this *Reply*, so there is no need to repeat them here. What is clear is that as part of the authorisation process the Ministry of Environment required the DNE to carry out environmental impact studies of the risks posed by the spray programme, and that when the necessary information was not forthcoming, it imposed its own conditions on the spray programme[1103]. But neither the Ministry of Environment nor any other State agency ever succeeded in making DNE (or anyone else) carry out an EIA[1104].

6.34 In *Pulp Mills*, the Court noted that "it is for each State to determine in its domestic legislation or in the authorization process for the project, the specific content of the environmental impact assessment required in each case, having

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[1101] Colombian Ministry of Environment, Resolution No. 341 of 2001, *op. cit.*, Art. 2. EM, Vol. II, Annex 14.

[1102] Republic of Colombia, Ministry of Environment, *Resolution No. 1065, Environmental Management Plan*, Arts. 5, 10 (26 Nov. 2001). EM, Vol. II, Annex 15. *See also* Rojas Report, *op. cit.*, para. 78. ER, Vol. II, Annex 8.

[1103] *See supra* Chap. 4, paras. 4.19-4.29, 4.55-4.56, 4.61, 4.65. *See also* Rojas Report, *op. cit.*, paras. 78-79. ER, Vol. II, Annex 8.

[1104] *See supra* Chap. 4, paras. 4.66, 4.75.

regard to the nature and magnitude of the proposed development and its likely adverse impact on the environment as well as to the need to exercise due diligence in conducting such an assessment"[1105]. This paragraph makes two important points. First, it implies that an EIA need not be specifically required by law, but may be required as part of the authorisation or permitting process. What matters is that some means is put in place to ensure that an EIA is carried out. Even if Colombia is correct in saying that no EIA was required by the 1993 Law on the Environment – which it is not – it is still the case that before authorising the spray programme the Ministry of Environment was required to ensure that an assessment of possible transboundary impacts be carried out. It attempted to exercise that power, but the law enforcement agencies responsible for execution of the aerial spraying programme refused to obey it, apparently with the backing of higher authorities. Second, while the "specific content" of each EIA is for the State to determine, there must be an EIA and it must have regard to "the nature and magnitude of the proposed development and its likely adverse impact on the environment". In this way the Court has recognized that there are certain minimum requirements that must be met. The Court cannot be understood as saying that the content of an EIA – if any – is entirely a matter for the State to decide in its sole discretion. The Court's approach would be denied of any practical effect if interpreted and applied to mean that a State could avoid its

[1105] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 61, para. 205.

international obligation to carry out a transboundary EIA by not requiring one as a matter of domestic law or authorization. On the contrary, the approach that Ecuador recognises to be reflected in the Court's approach has the merit of according with the views of the ILC and the arguments of the parties based on the Commentary. The 2001 ILC Commentary contains the following explanation:

> "(7) The specifics of what ought to be the content of assessment is left to the domestic laws of the State conducting such assessment. For the purposes of article 7, however, such an assessment *should contain an evaluation of the possible transboundary harmful impact of the activity*. In order for the States likely to be affected to evaluate the risk to which they might be exposed, they need to know what possible harmful effects that activity might have on them.
>
> (8) The assessment *should include the effects of the activity not only on persons and property, but also on the environment of other States*. The importance of the protection of the environment, independently of any harm to individual human beings or property is clearly recognized"[1106].

6.35 It is apparent from the Commentary that whatever else may be required by national law, international law requires at a minimum that an EIA assess possible effects on people, property and the environment of other States likely to be affected. If national law does not ensure that such an assessment is carried out

[1106] United Nations General Assembly, *Report of the International Law Commission on the Work of its Fifty-Third Session (23 April–1 June and 2 July–10 August 2001)*, commentary to Article 7, at pp. 402-405, U.N. Doc. A/56/10 (2001) (emphasis added, internal citation omitted). Article 7 provides: "Any decision in respect of the authorization of an activity within the scope of the present articles shall, in particular, be based on an assessment of the possible transboundary harm caused by that activity, including any environmental impact assessment". *Ibid.*, p. 402.

– for whatever reason – then there is inevitably a breach of this obligation. That is the situation in which Colombia finds itself.

B. COLOMBIA DID NOT CARRY OUT A TRANSBOUNDARY EIA

6.36 The essential point in Ecuador's case on EIA is that no assessment of the risk of transboundary harm was conducted at any time prior to authorization or implementation of Colombia's aerial spraying programme; nor has it been carried out subsequently. Chapter 4 sets out in detail the account of how the Colombian Ministry of Environment and other agencies repeatedly tried but failed to compel the DNE to carry out the necessary studies. Without exception, these demands were frustrated by the organ of the Colombian State responsible for conducting the aerial spraying (DNE)[1107]. Spraying along the Ecuador border began in January 2000, at which point the Ministry of Environment was still trying to force the DNE to carry out the required EIA[1108]. It continued trying until the Minister of Environment resigned in 2003[1109].

6.37 Colombia has no case on EIA. Nothing in the *Counter-Memorial* shows that Colombia carried out an EIA of possible transboundary effects prior to authorising or implementing the border spraying programme. Indeed, Colombia

[1107] *See supra* Chap. 4, Sections I and II.

[1108] *See supra* Chap. 4, paras. 4.30,4.35.

[1109] *See supra* Chap. 4, paras. 4.48-4.67.

does not even purport to claim that it carried out an EIA. It complied neither with the requirements of international law nor even its own national law. In particular it failed to assess:

- the chemicals actually used in the spray programme;
- the likelihood of the spray drifting across the border;
- the likely impact on the receiving environment in Ecuador if spray did drift across the border.

6.38 Colombia argues that spraying was approved in 1994 only "after carrying out relevant scientific studies and assessing the existing situation"[1110]. It says that "[t]hese studies included experimental assessments of glyphosate applications in the Natural Park at the Sierra Nevada in Santa Marta in the 1980s"[1111]. The only study listed at this point in the *Counter-Memorial* was undertaken in 1987. It is reproduced in Annex 123, which indicates that "[t]his study has been undertaken for the need of the Colombian National Police to establish the effects on the jungle as a consequence of the intensive application (by means of spraying) of glyphosate used to destroy marijuana crops"[1112]. It goes on to list the sites at

[1110] CCM, Chap. 4, para. 4.8.

[1111] *Ibid.*, Chap. 4, para. 4.8, n. 253.

[1112] SGS (Societé Générale de Surveillance, S.A.) Colombia S.A., "Report of Contamination Control for glyphosate application at the Sierra of Santa Marts", Introduction (1987). CCM, Vol. III, Annex 123.

which tests were carried out, and the sampling scheme for soil, foliage and rivers[1113]. But that is all.

6.39 Three omissions in the 1987 study are fundamental. First, in Chapter 2 of this *Reply* Ecuador pointed out significant differences in the various spray formulations used by Colombia. It is unclear which of these formulations, if any, was used in the 1987 trial. Colombia does not say whether the spray used in 1987 consisted only of glyphosate, or was the same as one of the glyphosate-based formulated products and other substances subsequently used along the border to eliminate coca plantations. Was it Roundup Ultra? Or Roundup Export? Was Cosmo-Flux added? Or POEA? We do not know and Colombia does not say. Second, there is no reference in the study to any assessment of the likelihood of drift or deposition of herbicides at some distance from the target. The only field study conducted much later by Colombia on spray drift showed that glyphosate mixed with Cosmo-Flux, one of the adjuvants used in Colombia's spray programme, is more prone to drift than any other glyphosate-based formulation that was tested, yet Colombia refused to abandon the use of Cosmo-Flux[1114]. Third, the 1987 study makes no mention of possible transboundary impacts on Ecuador, and it says nothing about possible effects on humans, animals or

[1113] *Ibid.*

[1114] *See supra* Chap. 2, paras. 2.186-2.187; Las Palmas Ltda., Technical Department, *Glyphosate (10,4 l/ha) and Three Different Adjuvants, For Illicit Coca Crop (Erythoxylum spp.) Control, Agronomic Efficacy Testing of Doses of Glyphosate in Illicit Crops: Final Report*, p. 12 (July 2004). ER, Vol. III, Annex 15.

property. It tells us only what might happen to glyphosate in the jungle in a Colombian national park if one unidentified type of herbicide is directly sprayed on it months earlier[1115].

6.40 Given these manifest deficiencies, it is impossible to read the 1987 study as a transboundary EIA for the purpose of assessing the probable effects of different glyphosate formulations drifting into inhabited areas of Ecuador.

6.41 Nevertheless, in October 1993 the Colombian Health Ministry and the National Institute for Natural Renewable Resources and the Environment ("IDERENA") issued opinions approving the use of glyphosate for eradication of coca and marijuana crops[1116]. It is worth noting the terms in which IDERENA's opinion was given, because it does not support the rosy view of glyphosate – likening it to "baby shampoo" – presented in the *Counter-Memorial*[1117]. Reproduced in Annex 35 of Colombia's *Counter-Memorial*, it says, *inter alia*:

> "When the spraying process started in the Province of Huila, the Antinarcotics Police established ten (10) parameters, among which it is important to highlight the ones referring to environmental

[1115] SGS (Societé Générale de Surveillance, S.A.) Colombia S.A., "Report of Contamination Control for glyphosate application at the Sierra of Santa Marts", Introduction (1987). CCM, Vol. III, Annex 123.

[1116] CCM, Chap. 4, para. 4.9. *See also* Note from the General Manager of INDERENA (National Institute for Renewable Natural Resources and the Environment) to the Director of the National Narcotics Directorate of Colombia (8 Oct. 1993) (hereinafter "Oct. 1993 letter from INDERENA to DNE"). CCM, Vol. II, Annex 35; Note from the Colombian Health Minister to the Director of the National Narcotics Directorate (11 Oct. 1993). CCM, Vol. II, Annex 36.

[1117] CCM, Chap. 7, para. 7.97.

> aspects: the herbicide will not be sprayed on *inhabited areas, fish ponds, apiaries, poultry, or other animals*, and on Special Management Areas; spraying will not conducted in sites *close to water streams or sources*; not to over flight (*sic*) water pipe reservoirs, *schools or other sites that pose risk to human health and the environment*.
>
> *Under these conditions*, INDERENA ratifies the acceptance of the action strategy set by the National Narcotics Council in its communiqué dated 31 January 1992, pointing out the importance that must be given to compliance with the specific and technical parameters established for the eradication process of poppy crops and that must be kept for eradication of coca and cannabis crops"[1118].

6.42 It is Ecuador's case that the spraying has not been carried out in conformity with the parameters identified by IDERENA. Instead, toxic spray has indeed been sprayed over, or drifted over, inhabited areas, fish ponds, poultry, other animals, schools and other areas, where it "poses risk to human health and the environment" in Ecuador. It is notable that IDERENA foresaw the likely consequences of aerial spraying in more vulnerable areas. But like the 1987 study referred to earlier, this opinion cannot be described as a transboundary EIA, however concerned it may have been about the potential risks. Colombia does not attempt to argue that it constitutes an EIA.

[1118] Oct. 1993 letter from INDERENA to DNE. CCM, Vol. II, Annex 35 (emphasis added).

C. AN EMP IS NOT AN EIA

6.43 The authorisation to begin spraying in border areas was thus not based on a transboundary EIA. Nevertheless, Colombia argues that the Environmental Management Plan ("EMP"), which lays down the conditions for the spraying programme, "is equivalent to an environmental impact assessment"[1119]. That might be convincing if an EMP met the main requirements of an EIA, but it does not, as a comparison of Colombia's own description of the two processes shows.

6.44 Colombian law provides that:

> "The environmental impact assessment will include information about the location of the project and the biotic and abiotic and socio-economic elements of the milieu that may suffer deterioration by the corresponding work or activity that for their execution are required to have a license, and an evaluation of the impacts they may cause. It will also include the design of the plans for prevention, mitigation, correction, and compensation for impacts and the environmental management plan for the work or activity"[1120].

6.45 In contrast, Colombia defines an "environmental management plan" in the following terms:

> "Environmental Management Plan: Is the plan that, in a detailed way, establishes the actions required to prevent, mitigate, control, compensate, and correct the possible negative environmental effects or impacts caused in the implementation of a project, work

[1119] CCM, Chap. 4, para. 4.10.

[1120] Colombian Law 99 of 1993, Art. 57. CCM, Vol. II, Annex 32.

> or activity. It includes follow-up, evaluation, and monitoring plans and contingency plans"[1121].

6.46 While there is evidently some overlap between an EIA and an EMP, the two processes are very different. Colombia acknowledges this. Paragraph 6.24 of the *Counter-Memorial* confirms that at the time of meetings with Ecuadorian officials in 2003, "Colombia had only developed an Environmental Management Plan, on the basis of the experience gained by prior experimental spraying programmes and studies, and not an 'Environmental Impact Assessment conducted prior to sprayings of Glyphosate', as requested by Ecuador"[1122].

6.47 Colombia's *Counter-Memorial* nevertheless argues that the EMP adopted in 2001 (nearly two years after spraying began near Ecuador) is the equivalent to an EIA. This is a fallacy: an EMP is not and could not be an EIA[1123]. An EIA is necessary to identify risks to the human population, to agriculture and to other socio-economic activities, to flora and fauna, and to the environment; and to determine whether they are acceptable and under what conditions. An EMP comes later in time, and in response to the risks identified by the EIA; based on the risks identified in the EIA, the EMP establishes the operational parameters and requirements for avoidance or mitigation of those risks. The EIA is therefore

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[1121] Colombian Decree 1753 of 1994, Art. 1. CCM, Vol. II, Annex 38.

[1122] CCM, Chap. 6, para. 6.24.

[1123] *Ibid.*, Chap. 4, para. 4.10.

the *sine qua non* for the EMP. Colombia's EMP is made up of three specific programmes, covering operations management, detection and spraying. It merely sets parameters for the operation, including flight altitude, temperature, relative humidity, cloudiness, rainfall, type of nozzle, droplet size, etc[1124]. This is not an EIA, whether under international law or under Colombian law.

6.48 Had there been a transboundary EIA, the EMP could and should have been informed by it. Without the benefit of a properly conducted EIA, it is hardly surprising that, among other things, the EMP fails to address the risk of drift causing transboundary harm and does not consider the dangers presented by the full range of chemicals in the spray mixture. Crucially, what the EMP appears to lack is the key information provided by an EIA, even in Colombia, namely "the location of the project and the biotic and abiotic and socio-economic elements of the milieu that may suffer deterioration . . . *and an evaluation of the impacts they may cause*"[1125]. The lack of any information about the location of the project and the impacts it may cause helps explain Ecuador's objections to the spraying programme: an EMP is simply not designed to address the possibility of transboundary harm arising in Ecuador. It is focused only on how the spray operation is conducted in Colombia.

[1124] *See* Note Nº SARE-142 from the Director of the National Narcotics Directorate of Colombia to the President of the Scientific and Technical Commission of Ecuador, para. 2.4. CCM, Vol. II, Annex 13.

[1125] Colombian Law 99 of 1993, Art. 57 (emphasis added). CCM, Vol. II, Annex 32.

6.49 Thus, to confuse the EMP with a transboundary EIA is to miss the point entirely. Whereas the EMP sets operational parameters, an EIA is "a national procedure for evaluating the likely impact of a proposed activity on the environment"[1126]. The UN Environmental Programme defines it as "an examination, analysis and assessment of planned activities with a view to ensuring environmentally sound and sustainable development"[1127]. Colombia's own documentation shows that its EMP does none of these things.

6.50 Colombia attempts to support its argument on EIA by reference to various other studies, including the studies delivered in 2005 and 2009 (the "Solomon Studies")[1128]. For reasons fully elaborated in Chapter 4, none of these studies can be treated as an EIA[1129]. Neither addressed the risks to Ecuador, and both relied upon seriously flawed data when evaluating the risk of spray drift. In any event, they were conducted long after spraying began[1130]. The conclusion that follows inexorably from the history revealed in Chapter 4 is obvious: at no time, whether before it began spraying in border areas or subsequently, has Colombia carried out an EIA of potential transboundary impacts.

[1126] *See* United Nations Convention on Environmental Impact Assessment in a Transboundary Context, Art. 1(vi) (1991), 1989 UNTS 310, reprinted in 30 I.L.M. 800 (1991).

[1127] 1987 United National Environmental Programme Goals and Principles of Environmental Impact Assessment, preamble.

[1128] CCM, Chap. 7, paras. 7.11-7.12.

[1129] *See supra* Chap. 4, paras. 4.37-4.41, 4.45-4.46.

[1130] *See ibid.*

6.51 In conclusion, Colombia's own evidence has shown that it did not carry out a transboundary EIA. To plug this hole in its case, Colombia has attempted to argue that no EIA was required, or alternatively to find an EIA equivalent in the EMP. Of necessity, its argument fails because the EMP and later studies were not designed to do what a transboundary EIA is meant to do – assess likely impacts on other States. There has plainly been a violation of Colombia's obligations in general international law with respect to transboundary EIA.

Section IV. Failure to Act with Due Diligence to Prevent Transboundary Harm

A. COLOMBIA'S FAILURE TO PREVENT SIGNIFICANT HARM

6.52 Colombia argues that there is no evidence of significant harm in Ecuador[1131]. Chapter 3 of this *Reply* sets out in detail the evidence of avoidable and significant harm caused by Colombia's deposition of toxic herbicides over Ecuadorian territory. Chapter 3 lists, *inter alia*:

- effects on the health of the population, including damage to eyesight, sickness, skin and throat irritation, vomiting and diarrhea;
- destroyed or damaged crops and farm animals;
- effects on forests, water supplies and the environment;
- displacement and effects on the health and cultural life of indigenous peoples;

[1131] CCM, Chap. 7, para. 7.10.

– cumulative effects on a fragile environment and subsistence lifestyle arising from repeated exposure to toxic spraying[1132].

6.53 Contrary to Colombia's assertions, the totality of the damage more than satisfies the test of "significant harm", a standard which Colombia accepts is the threshold for obligations of transboundary harm prevention and risk management to arise[1133]. This is the term used by the ILC in the 1997 Convention on International Watercourses[1134] and the 2001 Articles on Prevention of Transboundary Harm[1135]. The Commentary to both texts notes that "significant" harm need not be serious or substantial but must be "more than trivial"[1136]. In the present case, the health symptoms which Colombia perfunctorily dismisses include eye irritation, respiratory distress, skin infections and gastroinsestinal difficulties[1137]. None of these are trivial effects. Nor can the evidence of pollution of essential water supplies, crop damage and loss of harvests, or harm to farm animals, be classed as trivial. Some villagers have had to move away from polluted

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[1132] *See supra* Chap. 3, Sec. I.

[1133] CCM, Chap. 8, para. 8.59.

[1134] Convention on the Law of the Non-Navigational Uses of International Watercourses, Art. 7 (1997), 36 I.L.M. 700 (1997).

[1135] International Law Commission, *Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities*, Arts. 1-4, 8-12 (2001) (hereinafter "Draft Articles on Prevention of Transboundary Harm").

[1136] United Nations General Assembly, Convention On the Law of the Non-Navigational Uses of International Watercourses, *Report of the Sixth Committee Convening as the Working Group of the Whole*, p. 5, U.N. Doc. A/51/869 (11 Apr. 1997). United Nations General Assembly, *Report of the International Law Commission on the Work of its Fifty-Third Session (23 April–1 June and 2 July–10 August 2001)*, p. 152, paras. (4)-(7), U.N. Doc. A/56/10 (2001).

[1137] *See supra* Chap. 3, Section I, esp. para. 3.14.

border areas[1138]. These effects are all documented in the *Memorial* and in Chapter 3 of this *Reply*[1139]. Under human rights law, effects of the scale and kind inflicted on Ecuador have been more than sufficient to establish violations of the right to life, the right to private life, the right to property, and the right to health and a healthy environment[1140]. They are more than sufficient to satisfy the threshold standard of significant harm in general international law. Colombia is responsible in international law for its failure to prevent this harm, and Ecuador is entitled to reparation as indicated in Chapter 8.

6.54 In response to Colombia's assertion that it took "reasonable precautions" when conducting its aerial spraying programme[1141], it is only logical that the reasonableness of the precautions allegedly taken depends on the risk of harm that has been created. Colombia asserts that the herbicide was a Class III substance, *i.e.*, that it was only "mildly toxic"[1142]. Ecuador has already shown in Chapter 2

[1138] *See e.g., supra* Chap. 3, paras. 3.83, 3.114. *See also e.g.*, Declaration of Witness 10, 16 Jan. 2009, p. 4. EM, Vol. IV, Annex 198; Declaration of Witness 11, 16 Jan. 2009, p. 4. EM, Vol. IV, Annex 199.

[1139] EM, Chap. 6 ; *supra* Chap. 3, Section I.

[1140] *Social and Economic Rights Action Centre and the Centre for Economic and Social Rights v. Nigeria*, ACHPR Comm. 155/96 (2002); *Maya Indigenous Communities of the Toledo District v. Belize,* Inter-Am. C.H.R., Report No. 40/04, Case 12.053 (12 Oct. 2004); *López Ostra v. Spain*, *Judgment*, ECHR, Series A No. 303-C (9 Dec. 1994); *Guerra and Others v. Italy, Judgment*, ECHR, Reports of Judgments and Decisions 1998 I (19 Feb. 1998); *Fadeyeva v. Russia* [2005] ECHR 376; *Öneryildiz v. Turkey* [2004] ECHR 657; *Case of Taskin and Others v. Turkey, Judgment*, ECHR, paras. 113-119 (10 Nov. 2004); *Tatar v. Romania*, No. 67021/01 ECHR, para. 88 (2009); *Budayeva, al. v. Russia*, Judgment, No. 15339/02, ECHR (2008).

[1141] CCM, Chaps. 7 and 8, paras. 7.187, 8.49.

[1142] CCM, Chap. 8, para. 8.49.

of this *Reply* that this is not true, and that Colombia has misrepresented the composition of the compounds actually used at various times[1143]. The *Counter-Memorial*'s claim that only two glyphosate-based products have been used (Roundup SL and GLY-41) [1144] is inconsistent with the evidence that Colombia used a different product, Roundup Export, and discontinued its use only after the U.S. Environmental Protection Agency gave it the highest possible toxicity rating and determined, among other things, that it causes permanent eye damage[1145]. It is also inconsistent with the evidence that Colombia used Roundup Ultra as well[1146]. Indeed, all of the compounds used in the aerial spraying programme are significantly more toxic to human health than Colombia acknowledges. The warnings found on manufacturers' labels show clearly the risks to human health and legitimate agriculture and livestock created by using these chemicals[1147]. They point to the need for the utmost care and caution. The addition of POEA and Cosmo-Flux further exacerbates the problem that these chemicals are simply inappropriate for spraying in inhabited areas. In many countries the aerial spraying of chemicals such as those used by Colombia is banned altogether or severely restricted[1148]. The European Union directive on aerial spraying

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[1143] *See supra* Chap. 2, paras. 2.17-2.63.

[1144] CCM, Chap. 4, para. 4.50.

[1145] *See supra* Chap. 2, paras. 2.18-2.23.

[1146] *See supra* Chap. 2.

[1147] *See supra* Chap. 2, paras. 2.19-2.20, 2.27-2.29, 2.32-2.34, 2.37-2.41.

[1148] *See supra* Chap. 4, paras. 4.99-4.114.

succinctly summarises why aerial spraying has to be severely limited and stringently controlled:

> "Aerial Spraying of pesticides has the potential to cause significant adverse impacts on human health and the environment, in particular from spray drift. Therefore, aerial spraying should generally be prohibited with derogations possible where it represents clear advantages in terms of reduced impacts on human health and the environment in comparison to other spraying methods, or where there are no viable alternatives, provided that the best available technology to reduce drift is used"[1149].

6.55 For all these reasons and others reviewed in detail in Chapter 2 of this *Reply*, it is correct to characterize aerial application of the glyphosate-based formulations used by Colombia in inhabited border areas as "inherently hazardous" and Ecuador rejects Colombia's claim that they are not[1150]. The aerial

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[1149] European Parliament and the Council of the European Union, *Directive 2009/128/EC: Establishing a Framework for Community Action to Achieve the Sustainable Use of Pesticides*, para. (14) (21 Oct. 2009). ER, Vol. IV, Annex 109.

[1150] *See supra* Chap. 2, paras. 2.17-2.61; R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008,* p. 30 (Jan. 2011) (concluding that Colombia's aerial spraying operations have routinely violated numerous operational parameters). ER, Vol. II, Annex 1; Durham K. Giles, Ph.D., *Spray Drift Modeling of Conditions of Application for Coca Crops in Colombia*, p. 48 (Jan. 2011) (concluding that meaningful quantities of spray drift are expected to travel 10 kilometres or more). ER, Vol. II, Annex 2; Stephen C. Weller, Ph.D., *Glyphosate-Based Herbicides and Potential for Damage to Non-Target Plants Under Conditions of Application in Colombia*, p. 25 (Jan. 2011) (concluding that drift resulting from Colombia's aerial spraying operations would be expected to cause injury to plants at distances of up to 10 kilometres from the site of application). ER, Vol. II, Annex 3; Charles A. Menzie, Ph.D. & Pieter N. Booth, M.S., *Response to: "Critique of Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador," As Presented in: Counter-Memorial of the Republic of Colombia, Appendix*, p. 41 (Jan. 2011) (concluding that a buffer zone of at least 10 kilometres is warranted). ER, Vol. II, Annex 6; Reinhard Joas, Ph.D., *The Development of the 2009 European Union Pesticides Directive With Particular Focus on Aerial Spraying*, pp. 13-16 (Jan. 2011) (hereinafter "Joas Report")

spraying of these chemical compounds has predictably and foreseeably caused significant harm in Ecuador[1151]. Moreover, there is no countervailing public benefit that could justify imposing such a burden on the population living on Ecuador's side of the border. In these circumstances, the measures required to prevent transboundary harm will necessarily be more demanding than Colombia has so far recognized. Unfortunately, the measures taken by Colombia to prevent transboundary harm have been lax and ineffective in the extreme.

6.56 Chapter 4 details how poorly regulated Colombia's aerial spraying programme is, especially when compared to generally accepted international standards endorsed by the UN Food and Agricultural Organization and followed or exceeded in many other countries[1152]. Of itself, that is sufficient to show that Colombia has not acted with due diligence to prevent significant harm in Ecuador[1153]. When the flight data records submitted in evidence by Ecuador show that even Colombia's already lax regulations are regularly flouted with evident impunity, the argument that it took "reasonable precautions" to prevent transboundary harm becomes wholly unsustainable[1154]. The combination of

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(concluding that Colombia's aerial spraying programme is inconsistent with European Union legislation designed to prevent risks to human health and the environment). ER, Vol. II, Annex 7.

[1151] *See supra* Chap. 3, Section I.

[1152] Food and Agriculture Organization of the United Nations, *Guidelines on Good Practice for Aerial Application of Pesticides* (2001). ER, Vol. IV, Annex 98.

[1153] *See supra* Chap. 4, paras. 4.77-4.87, 4.99-4.114.

[1154] *See supra* Chap. 2, Sections II, III and IV.

inappropriate chemicals, lax regulation and inadequate enforcement is fatal to Colombia's case on due diligence. It cannot credibly say that it has acted with the due diligence expected of governments which carry out or permit hazardous activities near an international border. When compared to the standard set by the Court in the *Pulp Mills* case, Colombia's failure to act accordingly is manifest.

B. DUE DILIGENCE IN THE *PULP MILLS* CASE

6.57 With regard to the prevention of transboundary harm, the Court held in *Pulp Mills*:

> "The Court points out that the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory. It is 'every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.' A State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State. This Court has established that this obligation 'is now part of the corpus of international law relating to the environment'"[1155].

6.58 The obligation of prevention is not an obligation of result nor does it require in all cases the elimination of all risk. To that extent Ecuador and Colombia agree, and it is unnecessary to respond to Colombia's arguments on the point. But there is plainly an obligation of diligent conduct – to take measures that are necessary in the circumstances to minimize or prevent significant

[1155] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 38, para. 101 (internal citations omitted).

transboundary harm[1156]. What measures are required will depend on the character of the risk and the likely harm. Colombia cites passages to this effect from the ILC commentary to its draft Articles on Prevention of Transboundary Harm[1157]. Ecuador does not disagree. The Parties are thus divided not about the principle of prevention as such, but about the nature of the risk from aerial spraying of the various compounds used by Colombia, and about the conduct required of Colombia to prevent transboundary harm.

6.59 Ecuador argued and continues to argue that in the circumstances of this case the standard of care that is necessary and readily achievable to reduce the risk of significant transboundary harm is to refrain from spraying within 10 kilometres of the border since this is the only response that can eliminate the risk of transboundary harm to Ecuador[1158]. Colombia characterises this as an "absolute prevention thesis"[1159], which it claims is not supported by either the ILC commentary or by this Court's judgment in *Gabčikovo-Nagymaros*[1160].

[1156] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 55, para. 187: "The Court considers that the obligation laid down in Article 36 is addressed to both Parties and prescribes the specific conduct of co-ordinating the necessary measures through the Commission to avoid changes to the ecological balance. *An obligation to adopt regulatory or administrative measures either individually or jointly and to enforce them is an obligation of conduct.* Both Parties are therefore called upon, under Article 36, to exercise due diligence in acting through the Commission for the necessary measures to preserve the ecological balance of the river". (Emphasis added).

[1157] CCM, Chap. 8, para. 8.52.

[1158] EM, Chap. 8, paras. 8.27-8.31.

[1159] CCM, Chap. 8, paras. 8.53-56.

[1160] *Ibid.*, Chap.8, paras. 8.55-56.

Colombia says that the "vigilance and prevention" required by the Court in that case "do not entail the elimination of all risk whatever"[1161]. That might be true if the potential harm were not as significant as it is in this case, or if it did not reach a level that amounted to a threat to human health and livelihood, as well as the natural environment, or if it were impossible to eliminate the risk by other reasonable means. But that is not the case here. Aerial spraying of glyphosate formulations with toxic surfactants is a threat to human health and livelihood and the environment in Ecuador. Eliminating the risk posed by aerial spraying is not only possible using reasonable means; it has already been accomplished. The risk was eliminated in 2007, when Colombia stopped aerial spraying in the border areas. It could have been eliminated in 2000, by not spraying near the border, as Ecuador has consistently sought.

6.60 To quote the Court's Judgment in *Pulp Mills*: Colombia must use "all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State . . ."[1162]. Ecuador is not asking for more than the Court itself has described as the appropriate standard to be applied. In the present case, as Ecuador has already shown in the *Memorial*, Colombia has not used "all the means at its disposal" in order to prevent transboundary drift causing

[1161] *Ibid.*

[1162] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 38, para. 101.

significant harm. Nor has it taken seriously the need for an appropriately precautionary approach to harm prevention. Yet it *can* do both: by making permanent its suspension of aerial spraying within 10 kilometres of the border, in effect since 2007. This Colombia has refused to do.

C. APPLICATION OF THE PRECAUTIONARY PRINCIPLE

6.61 Colombia argues that the precautionary principle "may be seen as providing guidance as to how States should conduct themselves in matters concerning sustainable development"[1163]. It goes on to claim that "[t]here is no reason to think that it modifies the substantive law as concerns transboundary harm"[1164]. This is not a serious argument. The most authoritative version of the precautionary principle was adopted by consensus in Principle 15 of the 1992 Rio Declaration on Environment and Development[1165]. Principle 15 specifically refers in this context to protection of the environment, not merely sustainable development. It provides: "In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty

[1163] CCM, Chap. 8, para. 8.57.

[1164] *Ibid.*

[1165] United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, Principle 15, U.N. Doc. A/CONF.151/26 Vol. I, reprinted in 31 I.L.M. 874 (1992).

shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation"[1166].

6.62 A moment's consideration of the many environmental treaties that refer to the precautionary principle or precautionary approach will immediately show that it is not limited to "sustainable development"[1167]. As a general principle, Principle 15 certainly covers transboundary pollution, and to argue otherwise is not sustainable.

6.63 But even if Colombia's argument with respect to the precautionary principle and sustainable development were correct, there can be no doubt that the kind of transboundary harm suffered by Ecuador amounts to an interference

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[1166] *Ibid.*

[1167] *See e.g.*, United Nations Framework Convention on Climate Change, Art. 3, U.N. Doc. A/AC.237/18 (Part II)/Add.1 (1992), reprinted in 31 I.L.M. 849 (1992); Convention on Biological Diversity, Preamble, 1760 UNTS 79, reprinted in 31 I.L.M. 818 (1992) and Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2226 UNTS 208, reprinted in 39 I.L.M. 1027 (2000); Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions, 2030 UNTS 122 (1994); Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals, 2237 UNTS 4 (1998); Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants, 2230 UNTS 79 (1998); 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Art. 3, reprinted in 36 I.L.M. 1 (1997); Stockholm Convention on Persistent Organic Pollutants, Art. 1, reprinted in 40 I.L.M. 532 (2001); Convention for the Protection of the Marine Environment of the Northeast Atlantic ("Paris Convention"), Art. 2, reprinted in 32 I.L.M. 1069 (1993); Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Art. 2(5), 1936 UNTS 269, reprinted in 31 I.L.M. 1312 (1992); Convention on Co-operation for the Protection and Sustainable Use of the Danube River, Art. 2(4) (1994) *available at*: http://www.icpdr.org/icpdr-pages/drpc.htm; Convention on the Protection of the Marine Environment of the Baltic Sea Area, Art. 3(2), 1507 UNTS 167, reprinted in 13 I.L.M. 546 (1974); Rhine Convention Against Pollution by Chlorides, Art. 4, reprinted in 16 I.L.M. 265 (1976); United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, Art. 6, reprinted in 34 I.L.M. 1542. *See* Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* 152-164 (3rd ed., Oxford U. Press, 2009).

with or denial of the right to sustainable development. The Court has itself noted how "[t]his need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development"[1168]. As a result of Colombia's aerial spraying of toxic herbicides Ecuador has suffered water pollution, soil pollution, loss of crops and harm to animals, as well as illness in the human population and damage to the environment in border areas. The most obvious characteristics of unsustainable development include material harm and a lack of material benefits for those most adversely affected[1169]. The kind of damage suffered by Ecuador cannot be characterised as consistent with sustainable development.

6.64 The UN Special Rapporteur on the Right to Health has also taken the view that the precautionary principle is applicable in the present case:

> "the Special Rapporteur's preliminary view was that there was credible and reliable evidence that the aerial spraying of glyphosate along the border damages the physical and mental health of people living in Ecuador. The Special Rapporteur's preliminary conclusion was that the evidence provided during the mission was sufficient to call for the application of the precautionary principle and that, accordingly, Colombia should not

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[1168] *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997*, p. 78, para. 140.

[1169] *Social and Economic Rights Action Centre and the Centre for Economic and Social Rights v. Nigeria*, ACHPR Comm. 155/96 (2002); *Maya Indigenous Communities of the Toledo District v. Belize, Judgment,* Inter-Am. C.H.R., Report No. 40/04, Case 12.053 (12 Oct. 2004); *Ilmari Lansman et al. v. Finland*, ICCPR Comm. No. 511/1992 (1996).

> recommence aerial spraying in the 10 km border zone with Ecuador . . ."[1170].

6.65 Ecuador agrees with the UN Special Rapporteur. The obligations of due diligence and transboundary EIA must be interpreted and applied in a precautionary manner in order to minimise or eliminate the real and foreseeable risk to Ecuador. This is hardly a controversial proposition. As a leading authority has observed, "[t]he point which stands out is that some applications of the principle, which is based on the concept of foreseeable risk to other states, are encompassed within existing concepts of state responsibility"[1171]. For the same reason, the ILC noted that the precautionary principle is already included in the principles of prevention and prior authorisation, and in environmental impact assessment, "and could not be divorced therefrom"[1172]. From this perspective, the importance of the precautionary principle as a general principle is that it redefines existing rules of international law on control of environmental risks and conservation of natural resources and brings them into play at an earlier stage than before. Like the UN Special Rapporteur on the Right to Health, Ecuador's position is that the requirements of due diligence in the circumstances of this case

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[1170] *Report of the Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, Paul Hunt: Preliminary Note on Mission to Ecuador and Colombia, Addendum*, para. 17, U.N. Doc. A/HRC/7/11/Add.3 (4 Mar. 2007). EM, Vol. II, Annex 31.

[1171] Ian Brownlie, *Principles of Public International Law* 276 (6th ed., Oxford U. Press, 2003).

[1172] United Nations, General Assembly, *Report of the International Law Commission on the Work of its Fifty-Second Session, 1 May -9 June and 10 July - 18 August 2000*, *Supplement No.10*, p. 128, para. 716, U.N. Doc. A/55/10 (2000).

must be interpreted and applied with precaution in mind, given the known risks of glyphosate, Cosmo-Flux, POEA and other chemical additives in Colombia's spray mixture[1173], and the uncertainties involved in such a large-scale experiment with human health and the environment. Colombia has given no answer to that argument. It has neither acted with due diligence nor followed a precautionary approach to the management of transboundary risk, as the following examples show.

D. NO PRIOR NOTIFICATION

6.66 Although there have been tens of thousands of spray flights along or near the border, save on one occasion in November 2004, no advance notification of spraying operations likely to affect Ecuador has ever been provided to the Government of Ecuador or to Ecuadorians living in or near the affected areas[1174]. Colombia asserts that "[a]s to advance notifications of individual missions, Colombia was under no obligation, having regard to the evident security concerns, to give such notification"[1175]. Colombia's current EMP includes a Communications Strategy which aims to "keep the society and community at large informed nationally, regionally, and locally, especially the communities

[1173] *See supra* Chap. 2, paras. 2.18-2.63.

[1174] CCM, Chaps. 5 & 6, para. 5.39, 6.33.

[1175] CCM, Chap. 6, para. 6.34.

located in the areas of influence of the Glyphosate spraying"[1176]. If the spraying poses a risk for Colombians that can be mitigated by advance warning then it equally poses a risk for Ecuadorians that could be mitigated by similar warnings. Yet no mention is made of communication with Ecuador or with the communities affected on the Ecuadorian side of the international frontier. Colombia sees such notification as somehow "problematic" and seems to assume that what Ecuador asks for is a public enquiry conducted by Colombia on Ecuadorian territory[1177].

6.67 No doubt consultation with those likely to be affected would have been an excellent policy, and Ecuador reserves the right to argue that such consultation should have taken place[1178]. But Ecuador's argument is much simpler: what it complains about is Colombia's failure to provide those living on the Ecuadorian side of the border with any advance warning of spraying operations. Whether such warning is given directly or via the Ecuadorian government is immaterial. In the circumstances of this case, there was a duty to ensure that advance warning was given to those likely to be affected by spraying operations that posed a clear

[1176] Resolution Nº 1054 of 30 September 2003 of the Ministry for the Environment of Colombia, p. 190 (hereinafter "2003 Environmental Management Plan"). CCM, Vol. II, Annex 50.

[1177] CCM, Chap. 8, para. 8.96.

[1178] Notably, under Article 6 of ILO Convention 169. *See infra* Chap. 7, paras. 7.57 *et seq.*

and known risk to public health[1179]. What is a risk on one side of the border is equally a risk on the other.

E. FAILURE TO COMPLY WITH THE INADEQUATE EMP

6.68 The EMP sets out the conditions under which the Colombian Ministry of Environment authorised the aerial spraying programme. The point has already been made earlier in this Chapter that no version of Colombia's EMP directly addresses the risk of transboundary pollution affecting Ecuador[1180]. Nor has Colombia ever consulted Ecuador regarding the sufficiency of the EMP to protect Ecuador's territory, people or environment. While the EMP purports to address the environmental risks of glyphosate, it does not take into account the risks of surfactants or other components of the spray mixture, which may present even greater human health and environmental concerns[1181]. The current EMP also permits higher flight altitudes and removes flight speed limits during spraying[1182]. Both of these factors are important for limiting the amount of spray drift and preventing the spray from spreading beyond the intended target areas[1183]. Finally,

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[1179] *Corfu Channel (United Kingdom v. Albania), Judgment, Merits, I.C.J. Reports 1949*, p. 22; Draft Articles on Prevention of Transboundary Harm, *op. cit.*, Art. 8; EM, paras. 8.33-8.35, 8.55-8.62.

[1180] *See supra* Chap. 6, paras. 6.36-3.42.

[1181] 2003 Environmental Management Plan, *op. cit.*, pp. 186 (proposing studies to evaluate the impact of glyphosate on soil, water, and plants; does not address other chemical components of the spray mixture). CCM, Vol. II, Annex 50.

[1182] *Ibid.*, p. 173.

[1183] See *supra* Chap. 2, paras. 2.88-2.89, 2.98, 2.104-2.107.

the requirement for an independent audit has been removed from the EMP[1184]. These are fundamental failings. The rules governing the Colombian spray programme are among the world's most lenient. Some jurisdictions take the view that aerial spraying of herbicides is simply too dangerous. They have banned the practice[1185]. Those jurisdictions that do not ban spraying impose restrictions significantly stronger than those adopted by Colombia[1186]. This Court held in the *Pulp Mills* case that the exercise of due diligence entails "a careful consideration of the technology to be used"[1187]. In the present case, the problem is more the failure to give careful consideration to the way the technology is used than the technology itself, although at least one type of spray aircraft used by Colombia was indeed unsuitable for the task, for reasons set out in the next paragraph. Whatever the technology, a defective and inadequate set of operational parameters cannot satisfy Colombia's obligation of due diligence in international law, even if the spray planes followed it to the letter in every respect.

6.69 But they did not or could not follow it, and the reality is even worse than the inadequate EMP. Colombia claims to have taken "every care" to "ensure that

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[1184] 2003 Environmental Management Plan, *op. cit*. CCM, Vol. II, Annex 50.

[1185] Joas Report, *op. cit.*, p. 8. ER, Vol. II, Annex 7; s*upra* Chap. 4, paras. 4.101, 4.104.

[1186] *See supra* Chap. 4, paras. 4.104-4.114.

[1187] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 65, para. 223.

spraying occurs only on Colombian territory" and that no drift results[1188]. This is nonsense. Colombia concedes that operational parameters in the EMP must be complied with in order to avoid excessive drift and off-target damage[1189]. The *Counter-Memorial* reaffirmed the mandatory nature of the operational parameters and specifically said they are necessary to ensure the protection of people, plants and animals *in Ecuador*[1190]. Far from ensuring that "every care" is taken, compliance with the EMP, lax as it is, has been poor[1191]. The spray planes have violated the speed and height restrictions within 10 kilometres of the border tens of thousands of times. Colombia itself admits that the higher the speed and the greater the height, the farther the spray will drift from its intended target. As explained in detail in Chapter 2, flight data records show that Colombian aircraft repeatedly disregarded the requirements of the EMP, in a way that virtually ensured that spray would reach Ecuador. The aircraft flew too high, too fast and too close to the border when spraying[1192], resulting in a herbicide mist forming and drifting over Ecuador and onto watercourses flowing through Ecuadorian territory. The high speed military aircraft used for spraying operations (the OV-10 Bronco) were particularly unsuited to the task[1193], and the pilots were often

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[1188] CCM, Chap. 7, para. 7.16.

[1189] *Ibid*., Chap. 7, para. 7.17.

[1190] *Ibid*., Chap. 4, para. 4.74.

[1191] *See supra* Chap. 2, paras. 2.72-2.73.

[1192] *See supra* Chap. 2, paras. 2.89-2.106.

[1193] *See supra* Chap. 2, paras. 2.115-2.122.

operating in hostile conditions under fire. They had every reason to fly high and fast to avoid being shot[1194]. In these conditions, spray that should have fallen as large droplets disintegrated into a fine mist, more susceptible to drift[1195]. Sometimes the aircraft operated at night, or in unfavourable wind or climatic conditions, increasing the risk of drift[1196]. On thousands of occasions their spraying significantly exceeded the prescribed application rate[1197]. There were repeated problems of ill-discipline and incompetence among the pilots[1198]. All of these facts are set out in detail in Chapter 2 of this *Reply*.

6.70 In June 2003, the Ministry of Environment fined the DNE for violating various emergency measures imposed by the Ministry in Resolution 341 of 2001, including the immediate requirement to carry out environmental impact studies[1199]. In a subsequent ruling, the Council of State held that the DNE was obligated to comply with Resolution 341:

> "the guidelines stated by the environmental authorities should be followed when illicit crops are being sprayed, and not even the slightest deviation from these should be permitted, which means that **it is therefore necessary for permanent controls to be**

[1194] *See supra* Chap. 2, paras. 2.108-2.114.

[1195] *See supra* Chap. 2, paras. 2.97-2.98.

[1196] *See supra* Chap. 2, paras. 2.144-2.154.

[1197] *See supra* Chap. 2, paras. 2.123-2.133.

[1198] *See supra* Chap. 2, paras. 2.173-2.185.

[1199] Republic of Colombia, *Ministry of Environment Resolution No. 670, Whereby a Sanction is Imposed and Other Decisions Are Made* (19 June 2003). EM, Vol. II, Annex 19. *See supra* Chap. 4, para. 4.65.

> **undertaken, with continuous evaluations of any effects which might begin to appear** . . . . It is nevertheless advisable to order the Ministry of the Environment to continue to comply strictly with the Environmental Management Plan, and furthermore to not stop carrying out studies with a view to obtaining even more details of the effects of the chemical compound that is used in the spraying, with verification by the National Narcotics Division"[1200].

The flight data records show that these orders from Colombia's highest administrative tribunal were regularly ignored by the agencies responsible for execution of the aerial spraying programme – just as they previously ignored the resolutions of the Ministry of Environment.

6.71 Colombia claims to have audited compliance with the EMP. Why then has it not made the results of those audits available to the Court? The evidence provided by the flight data records for 2004 through 2008 and reviewed in Chapter 2 of this *Reply* shows clearly that the strict compliance ordered by the Council of State in 2004 did not occur[1201]. Moreover, as Chapter 2 of this *Reply* points out, the *Counter-Memorial* did not present the Court with any of the data Colombia claims to have recorded[1202]. Colombia did not submit any of the audit reports. In contrast, the data recorded by the spray planes and obtained by Ecuador from the U.S. Department of State is manifestly inconsistent with the description of the aerial spraying programme provided in the *Counter-*

[1200] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p.11 (19 Oct. 2004) (emphasis in original). ER, Vol. V, Annex 151.

[1201] *See supra* Chap. 2, Sections II-IV.

[1202] *See supra* Chap. 2, paras. 2.5, 2.71, 2.82, 2.154.

Memorial[1203]. The conclusion is obvious: the spray programme violates an order imposed by Colombia's highest administrative tribunal and Colombia does nothing to enforce either the rules laid down in the EMP or the orders of its own courts. This is not compatible with the reasonable standard of due diligence required by international law as set out in the *Pulp Mills* case. As this Court said in that case:

> "It [due diligence] is an obligation which entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators, to safeguard the rights of the other party. The responsibility of a party to the 1975 Statute would therefore be engaged if it was shown that it had failed to act diligently and thus take all appropriate measures to enforce its relevant regulations on a public or private operator under its jurisdiction"[1204].

Colombia has manifestly not taken "all appropriate measures to enforce its relevant regulations" or exercised a "level of vigilance in their enforcement" as required by the Court. It is ultimately responsible for that failure.

F. BUFFER ZONES

6.72 Colombia claims that it did not spray near Ecuador, or otherwise spray in or near vulnerable areas, including areas of human settlement, water bodies and

[1203] *See supra* Chap. 2, Sections II-IV.

[1204] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 58, para. 197.

other sensitive environments. The flight data outlined in Chapter 2 show that this claim too is false[1205]. Colombia has sprayed in very close proximity to highly sensitive areas in Ecuador – reserves set aside to protect the vulnerable communities of the Awá and Cofán indigenous peoples living on their traditional lands on both sides of the border[1206]. Only since Colombia stopped border spraying in 2007 has the problem of toxic spray deposition drifting into Ecuador been tackled effectively. However, Colombia has made no commitment not to resume border spraying. Ecuador thus remains at risk of suffering further transboundary harm unless this temporary 10 kilometre buffer zone is made permanent.

6.73 In this Chapter, as in the *Memorial*, Ecuador has identified various ways – including observance of a 10 kilometre no-spray zone adjacent to the Ecuadorian border – in which Colombia could and should have exercised greater diligence in conducting the spraying operation so as to eliminate or reduce the harm and the risk of harm to Ecuador[1207]. To reiterate, Ecuador's case is not that international law or the obligation of due diligence require in all circumstances the elimination of all risk. It argues only that necessary precautionary measures to prevent significant harm or the risk of such harm must be taken. Even Colombia agrees

[1205] *See supra* Chap. 2, Section IV.

[1206] *See supra* Chap. 2, paras. 2.170-2.179.

[1207] EM, Chap. 8, paras. 8.30-8.31.

that precautions are necessary in order to protect Ecuador[1208], yet it has failed to ensure that they are followed by those agencies charged with conducting the spray operation. International law requires at a minimum that Colombia assess the risks to Ecuador, adopt a proper EMP consistent with its due diligence obligations, and enforce its operational requirements. Colombia has done none of these.

6.74 Given the large scale of the spraying operations, the uncertain composition and effects of the toxic chemicals in use, and the known risks of aerial spraying, Ecuador is entitled in international law to expect Colombia to take the necessary steps to prevent foreseeable harm from occurring[1209]. In Ecuador's submission, that has always meant no spraying in border areas in circumstances where harm to Ecuador or its people is likely to result. It is not an unreasonable request in the circumstances, as Colombia belatedly recognized in 2007. It could have been accepted right from the beginning when Ecuador first made the request not to spray in border areas. At the very least, it should be made permanent, if not by Colombia itself then by order of the Court.

[1208] Colombia's Ministry of Foreign Affairs assured Ecuador on 20 December 2006 that the aerial spraying ". . . is executed under the strictest technical measures which guarantee the protection of the environment and human health, also preventing the sprayed mixture to reach Ecuadorian territory". Diplomatic Note from the Colombian Foreign Ministry to the Ecuadorian Embassy in Bogotá, 20 Dec. 2006. CCM, Vol. II, Annex 26.

[1209] *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, pp. 38, 55, 58, 60-61, 65, paras. 101, 187, 197, 204-205, 223.

G. FAILURE TO COOPERATE AND MONITOR

6.75 The point of cooperation in an environmental context is to help the parties prevent or mitigate transboundary harm. The ILC Commentary to Article 4 of its draft Articles on Prevention of Transboundary Harm makes the point cogently:

> "The principle of cooperation between States is essential in designing and implementing effective policies to prevent significant transboundary harm or at any event to minimize the risk thereof. The requirement of cooperation of States extends to all phases of planning and of implementation. Principle 24 of the Stockholm Declaration and principle 7 of the Rio Declaration recognize cooperation as an essential element in any effective planning for the protection of the environment. More specific forms of cooperation are stipulated in subsequent articles. They envisage the participation of the State likely to be affected in any preventive action, which is indispensable to enhance the effectiveness of any such action. The latter State may know better than anybody else, for instance, which features of the activity in question may be more damaging to it, or which zones of its territory close to the border may be more affected by the transboundary effects of the activity, such as a specially vulnerable ecosystem"[1210].

6.76 Ecuador has already set out in the *Memorial* its arguments on the international obligation of transboundary cooperation to manage environmental

[1210] United Nations General Assembly, *Report of the International Law Commission on the Work of its Fifty-Third Session (23 April–1 June and 2 July–10 August 2001)*, p. 396, U.N. Doc. A/56/10 (2001). Article 4 of the ILC Draft Articles on Prevention of Transboundary harm provides: "States concerned shall cooperate in good faith and, as necessary, seek the assistance of one or more competent international organizations in preventing significant transboundary harm or at any event in minimizing the risk thereof". *Ibid.*

risks[1211]. Colombia's response to Ecuador's arguments on non-cooperation is twofold. It says firstly that it had no duty to cooperate, save under Article 14 of the 1988 Narcotics Convention[1212]. Secondly, it argues that it did cooperate[1213].

6.77 Colombia asserts that the 1988 Narcotics Convention is the "explicit legal basis" for cooperation on matters relating to eradication of illicit drug crops[1214]. It claims that the 1988 Narcotics Convention is a *lex specialis* with respect to transborder cooperation on drug eradication, but its reading of Article 14 of the Convention is curiously fragmented[1215]. It complains that Ecuador did not cooperate with respect to eradication measures as provided for in Article 14(3), while at the same time discounting the reference in Article 14(2) with respect to fundamental human rights and taking due account of the protection of the environment[1216]. Colombia ignores Article 2 entirely, although this article sets out important conditions on the measures the parties may take. To recall, Article 2(2) provides that:

> "The Parties shall carry out their obligations under this Convention in a manner consistent with the principles of sovereign equality and territorial integrity of States and that of non-intervention in the domestic affairs of other States".

[1211] EM, Chap. 8, paras. 8.38-8.71

[1212] CCM, Chap. 8, paras. 8.113-8.121.

[1213] *Ibid*., Chap. 8, paras. 8.105-8.112.

[1214] *Ibid*., Chap. 8, para. 8.114.

[1215] *Ibid*., Chap. 8, paras. 8.113-8.121.

[1216] *Ibid*., Chap. 8, paras. 8.117-8.119.

6.78 It seems obvious, as explained earlier in this Chapter, that the objectives of the 1988 Narcotics Convention were carefully framed to ensure respect for the territorial integrity of other States, including the human rights of their citizens, and the protection of their environments[1217]. In that context the cooperation envisaged by Article 14(3) cannot be interpreted so narrowly as to exclude the human rights and environmental concerns referred to in Article 14(2) or the limitations prescribed by Article 2. Put another way, Article 14(2) requires that the general law on environmental protection, including transboundary cooperation, must be taken into account when interpreting and applying Article 14(3)[1218]. The latter article is not to be read in splendid isolation from the rest of Article 14 or from Article 2, as Colombia prefers. In Ecuador's reading of Article 14(3), "cooperation in eradication programmes along the common frontiers" necessarily includes cooperation to prevent and mitigate the likely effects on people and environmental damage in Ecuador caused by those programmes. Any other interpretation would be inconsistent with the respect for Ecuador's territorial integrity required by Article 2.

6.79 Ecuador's case with respect to the 1988 Narcotics Convention thus remains that Colombia neither facilitated the exchange of scientific and technical

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[1217] *See supra* Chap. 6, paras. 6.10-6.28.

[1218] Vienna Convention on the Law of Treaties, Art. 31(3)(c), 1155 UNTS 331, entered into force 27 Jan. 1980; *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, pp. 29, 60, paras. 62, 204.

information as required by Article 14(3)(b), nor with respect to the hazards posed by aerial spraying along the common frontier did it "seek to cooperate" as required by Article 14(3)(c).

6.80 As regards cooperation in general international law, the *Counter-Memorial* discusses the *Lac Lanoux* case and notes that the arbitral tribunal rejected Spain's argument that there existed any rule of international law giving one State a right of veto over activities in another State[1219]. Ecuador has not argued that it has or should have a veto over spraying activities within Colombia.

6.81 What Ecuador maintains is that, because of the likely transboundary effects in Ecuador, Colombia had a duty to cooperate by consulting Ecuador and providing information about the chemical composition of the herbicide compounds prior to commencing its programme of border spraying operations. Thereafter, it should have given Ecuador due warning at an appropriate time before each operation. It should also have cooperated with Ecuador in joint monitoring. Ecuador reiterates that case law, multilateral and bilateral treaties, the 1988 Narcotics Convention, the ILC draft Articles on Prevention of Transboundary Harm, and Principle 19 of the Rio Declaration, as well as elementary considerations of humanity referred to in the *Corfu Channel Case*, all point to the conclusion that neighbouring States have a duty in general

[1219] CCM, Chap. 8, para. 8.108.

international law to cooperate in order to control and minimize the risk of transboundary harm[1220]. They must give each other prior notice of the activity, provide adequate information about the substances used, and the risks posed to health, property or the environment. They must consult and negotiate in good faith in order to identify means of preventing or minimizing the risk of transboundary harm before it occurs[1221]. Colombia did none of these things before undertaking its programme of aerial spraying in border areas in January 2000. It acted entirely unilaterally and in breach of its obligations in general international law. As detailed in Ecuador's *Memorial*, Colombia did not respond to repeated requests for information about the chemicals in use; nor did it give Ecuador advance notice of spraying, nor has it cooperated in joint monitoring[1222].

6.82 Colombia's own Environmental Code provides for "reciprocal and prior notice" with bordering States regarding actions taken in one State (by the government or private parties) that may harm the environmental rights or interests of another State. Such communication must be made with sufficient advance notice so that the governments involved can address the situation[1223]. Colombia

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[1220] EM, Chap. 8, para. 8.68.

[1221] *Ibid*., Chap. 8, paras. 8.63-8.70.

[1222] *Ibid*., Chap. 3, paras 3.6-3.44.

[1223] Republic of Colombia, *National Code of Renewable Natural Resources and Environmental Protection, Decree 2811 of 1974*, Art. 10(b) (18 Dec. 1974) ("PART II: ENVIRONMENTAL ISSUES OF INTERNATIONAL SCOPE OR INFLUENCE. Article 10: To prevent or solve environmental problems and regulate the use of renewable natural resources shared with neighbouring countries and, without prejudice to existing treaties, the Government will seek to

nevertheless failed to consult Ecuador before authorising border spraying operations even after it was alerted to Ecuador's very real concerns[1224]. Despite repeated requests from Ecuador[1225], Colombia failed to identify the chemicals to be used. It failed to notify Ecuador when and where spraying would take place. Monitoring of effects on Ecuador's side of the border plainly requires cooperation by both States, yet that cooperation was never forthcoming. All of this made it impossible for Ecuador to warn the border communities likely to be affected or to monitor the spraying and its effects. Such elementary failures are not consistent with good faith cooperation by Colombia.

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complement the existing agreements or negotiate other agreements deemed appropriate . . . (b) The reciprocal and prior notice of environmental changes or imbalances that can originate from works or planned projects by the governments or the peoples of the respective countries, with sufficient time in advance so that said governments can take the appropriate action when they consider that their rights and environmental interests may be impaired"). ER, Vol. V, Annex 119.

[1224] EM, Chap. 3, paras. 3.6-3.22; *see also, supra* Chap. 3, paras. 3.7, 3.99, 3.141.

[1225] EM, Chap. 3, paras. 3.6-3.22. Requests sent by Ecuador referring to the Environmental Impact Assessment, the chemical compounds used, dates and locations of future spraying operations include: 1) Diplomatic Note 12437-47 SP/DGA/DTANC, sent from the Ministry of Foreign Affairs of Ecuador to the Embassy of Colombia in Ecuador (24 July 2000). EM, Vol. II, Annex 36. 2) Diplomatic Note 21085 SSN/DGST, sent from the Ministry of Foreign Affairs of Ecuador to the Embassy of Colombia in Quito (16 Feb. 2001). EM, Vol. II, Annex 38. 3) Diplomatic Note 47839 DGAF, sent from the Ministry of Foreign Affairs of Ecuador to the Embassy of Colombia in Quito (18 Oct. 2002). EM, Vol. II, Annex 45. 4) Diplomatic Note 68934/2003-GM, sent from the Ministry of Foreign Affairs of Ecuador to the Ministry of Foreign Affairs of Colombia (23 Oct. 2003). EM, Vol. II, Annex 52. 5) Diplomatic Note 75204/2003-GM, sent from the Ministry of Foreign Affairs of Ecuador to the Ministry of Foreign Affairs of Colombia (21 Nov. 2003). EM, Vol. II, Annex 51. 6) Diplomatic Note 4820/2004-GM, sent from the Ministry of Foreign Affairs of Ecuador to the Ministry of Foreign Affairs of Colombia (10 Feb. 2004). EM, Vol. II, Annex 55. 7) Diplomatic Note 15839/2004-GM-VM, sent from the Ministry of Foreign Affairs of Ecuador to the Embassy of Colombia in Quito (10 Mar. 2004). EM, Vol. II, Annex 59. 8) Diplomatic Note 20434/2003-GM, sent from the Ministry of Foreign Affairs of Ecuador to the Ministry of Foreign Affairs of Colombia (31 Mar. 2004). EM, Vol. II, Annex 61.

6.83 Colombia accepts that an assessment of possible risks would not be "a one-off exercise" but would involve "keeping the situation under continuous review"[1226]. In other words, it accepts a duty to monitor the effects of its spraying programme. In 2004, Colombia's Council of State ordered the Ministry of Social Protection to "conduct studies geared towards determining the impact of the chemicals glyphosate, poea, and cosmoflux on the lives of Colombians"[1227]. It also ordered the DNE to "verify the effects of aerial fumigation using glyphosate, plus poea, plus cosmoflux for illicit crop eradication on the environmental elements, in the areas that it has selected from those that have been sprayed, by way of sample, and its study will include sprayed areas over varying time periods. During this process, it will continue to perform the audit required for monitoring the effects of fumigation"[1228]. Colombia claims that a "careful appraisal" is conducted twice a year by qualified scientists with "full access to information"[1229]. Yet the evidence set out in Chapter 2 of this *Reply* shows how Colombia has entirely failed to monitor the spray operation's compliance with its own EMP requirements[1230]. The "strict compliance" with the EMP called for by the Council of State Judgment[1231] has not been met, yet Colombia appears to have

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[1226] CCM, Chap. 8, para. 8.89.

[1227] State Council of Colombia, *Claudia Sampedro and Others*, Judgment on Appeal From the Administrative Tribunal of Cundinamarca, p. 2 (19 Oct. 2004). ER, Vol. V, Annex 151.

[1228] *Ibid*., p. 11, para. 4.

[1229] CCM, Chap. 8, para. 8.90.

[1230] *See supra* Chap. 2, paras. 2.88-2.154.

[1231] *See supra* Chap. 6, paras. 6.70-6.71.

no idea that this is the case. Either Colombia has not been monitoring the programme and does not know it is not working, or it knows but is unwilling to admit the reality.

6.84 Against this background, it is impossible to view the diplomatic contacts between the two sides as meaningful cooperation. Colombia's failure to cooperate is a violation of its obligations in general international law, a breach of the 1988 Narcotics Convention, and of the 1992 Convention on Biological Diversity, as detailed in Ecuador's *Memorial*[1232]. For Colombia, the border spraying operation was in substance non-negotiable until 2007, when the unilateral decision was taken to suspend spraying within 10 kilometres of Ecuador. The suspension was and remains a helpful development, but it represents a fragile truce rather than a permanent solution to the problem. The Foreign Minister of Colombia reiterated his government's position that the suspension of aerial spraying near Ecuador is only temporary[1233]. Colombia has rejected Ecuador's repeated entreaties to make the suspension permanent and binding: "Colombia was not in a position to make a commitment regarding the

[1232] EM, Chap. 8, pp. 293-319.

[1233] EM, Chap. 3, para. 3.72.

fumigation question, nor could it predict what decisions would be made in the future regarding this issue"[1234].

Conclusions

6.85 With respect to transboundary harm, the principal source of applicable law is general international law and applicable treaties, including, but not limited to, the 1988 Narcotics Convention. In accordance with the law of treaties, the 1988 Narcotics Convention must be interpreted and applied taking applicable general international law into account and in accordance with Article 14(2).

6.86 The relevant general international law is to be found, *inter alia*, in the ILC draft Articles on Prevention of Transboundary Harm and in judgments of this Court, in particular the Court's 2010 Judgment in *Pulp Mills on the River Uruguay*. The threshold of significant harm required by Article 2(a) of the ILC articles is more than met given the risk posed by aerial spraying of a chemical compound, known to be toxic, in border areas adjacent to human habitation, crops, domestic animals and water supplies. Colombia is wrong to say that Ecuador claims to be "completely immune" from incidental effects of activities carried out in Colombian territory[1235]. Ecuador's evidence shows that these activities have caused significant harm to people, property and the environment in

[1234] *Ibid.*

[1235] CCM, Chap. 8, para. 8.122(3).

Ecuador, and that the precautionary principle is applicable when applying the obligation of due diligence to the circumstances of this case.

6.87 Colombia has failed to take appropriate or adequate precautionary measures to prevent or mitigate significant harm. In particular, it failed to carry out any EIA prior to commencing spraying border areas in January 2000, or subsequently[1236]. The EMP does not constitute an EIA under international law or even under Colombian law[1237]. The failure to conduct an EIA prior to implementation of the border spraying programme, or at all, constitutes a violation of general international law, in accordance with this Court's 2010 Judgment in *Pulp Mills on the River Uruguay*, and is additionally a violation of Articles 2 and 14 of the 1988 Narcotics Convention.

6.88 Colombia has also failed to conduct the aerial spraying in a manner consistent with its obligation of due diligence. Aerial spraying of glyphosate-based herbicides is inherently hazardous to human health and livelihood and the environment in Ecuador. In the circumstances of this case, the required standard of diligence is readily achievable – the risk of transboundary harm from aerial spraying can be eliminated by not spraying near the border. The EMP sets out the operational parameters for spraying, but it provides inadequate protection against

[1236] *Supra* Chap. 4, Section I and II.

[1237] *Supra* Chap. 6, paras. 6.44-6.51.

transboundary impacts, and in any event it has not been complied with by the planes conducting the spraying operation. The failure to take adequate preventive measures when implementing the border spraying programme, or even to enforce the EMP, constitute violations of general international law, in accordance with this Court's 2010 Judgment in *Pulp Mills on the River Uruguay*, and additionally violate Articles 2 and 14 of the 1988 Narcotics Convention.

6.89 Colombia has failed to cooperate in managing the transboundary risk posed by aerial spraying, in particular by failing to consult Ecuador before authorising the spraying operation, by failing to provide information on the composition of the spray, by failing to give advance warning of spraying operations, by failing to cooperate in joint monitoring, and by failing to consult and negotiate in good faith with Ecuador once alerted to Ecuador's very real concerns. The failure to cooperate is a violation of general international law, of the 1992 Biological Diversity Convention, and of Articles 2 and 14 of the 1988 Narcotics Convention.

6.90 Finally, Colombia's violations of its international obligations have resulted in significant harm to persons, property and the environment in Ecuador. It is responsible in international law for this harm and is under an obligation to make reparation as set forth in Chapter 8 of this *Reply*.

CHAPTER 7.

VIOLATIONS OF HUMAN RIGHTS AND INDIGENOUS PEOPLES' RIGHTS

Section I. Overview

7.1 In its *Memorial*, Ecuador made three arguments with respect to the violation of human rights by Colombia. First, it alleged that Colombia has violated the rights of indigenous peoples in Ecuador, in contravention of the ILO Convention No. 169 Concerning Indigenous and Tribal Peoples in Independent Countries, Article 27 of the 1966 International Covenant on Civil and Political Rights ("ICCPR"), and Article 21 of the American Convention on Human Rights[1238]. Second, it alleged that Colombia has violated the human rights of persons in Ecuador, including the right to life, health, private life, food and water, property, humane treatment, a healthy environment, and information, in contravention, *inter alia*, of the 1969 American Convention on Human Rights with the 1988 Additional Protocol, the International Covenant on Economic, Social and Cultural Rights ("ICESCR"), the 1979 Convention on the Elimination of All Forms of Discrimination Against Women ("CEDAW"), the 1989 Convention on the Rights of the Child ("CRC"), and the ICCPR[1239]. Finally, it argued that human rights obligations are incorporated in the 1988 Narcotic Convention via Article 14(2) and have been violated in the same way[1240].

[1238] Memorial of Ecuador, Vol. I, Chap. 9, paras. 9.18-9.36 (hereinafter "EM").

[1239] EM, Chap. 9, paras. 9.43-9.107.

[1240] EM, Chap. 8.

7.2 In its *Counter-Memorial*, Colombia declares that Ecuador's claims concerning human and indigenous rights are unsubstantiated and "unsustainable" under applicable treaties or under customary international law[1241]. In general, it argues: (1) that the "factual underpinning" of the claims is inconsistent with the scientific evidence, and that the evidence of harm submitted by Ecuador is insufficient and unreliable[1242]; (2) that the aerial spraying is not targeted at people living across the border in Ecuador[1243]; (3) that there is no allegation of death or serious long-term illness[1244]; and (4) that the effects of herbicide pollution are so *de minimis* that Colombia has no obligations under international law which would require it to respect human rights or the rights of indigenous peoples outside its own territory[1245]. Furthermore, Colombia contests Ecuador's allegation that violations in three interdependent fields of international law – namely international environmental law, international human rights law, and international protection of indigenous peoples – may constitute an "integrated, mutually reinforcing whole"[1246]. In Colombia's view, Ecuador is supposed to substantiate each breach independently from the other in the three different fields. Finally, with respect to the effects on indigenous peoples, Colombia makes the same

[1241] Colombia Counter-Memorial, Chap. 9, para. 9.1 (hereinafter "CCM").

[1242] CCM, Chap. 9, para. 9.1.

[1243] CCM, Chap. 9, paras. 9.13-9.14.

[1244] CCM, Chap. 9, para. 9.61.

[1245] CCM, Chap. 9, paras. 9.22, 9.63.

[1246] CCM, Chap. 9, paras. 9.4-9.8.

arguments about evidence, territoriality of obligations, and targeting[1247]. It also claims that Colombia has done nothing which could amount to a denial of the rights of indigenous peoples[1248].

7.3 Following this overview, the Chapter is divided into five sections:

- In **Section II**, Ecuador rebuts Colombia's contentions that its actions have not affected the human rights of the population living on the Ecuadorian side of the border. Contrary to the impression created in Colombia's *Counter-Memorial*, all concerned stakeholders in the matters underlying the present dispute – with the exception of the Government of Colombia in these proceedings – share the conclusion that spray drift has crossed the border and caused significant risks and significant harm, not only to the natural environment and crop fields, but also – directly and indirectly – to the human population living across the border on Ecuadorian territory. These consequences entail serious human rights violations for which Colombia must bear responsibility.

- **Section III** addresses the question of the so-called "territoriality" of human rights and indigenous rights. It will be seen that Colombia,

[1247] CCM, Chaps. 7 and 9, paras. 7.178-7.186, 9.13-9.14, 9.159, 9.164-9.167,

[1248] CCM, Chap. 9, paras. 9.165, 9.169.

Ecuador and all other Latin American States share a regional legal space aimed at securing human rights protection throughout the entire region. This reality is incompatible with Colombia's attempt to exclude from international legal regulation the extra-territorial effects of activities detrimental to human rights and indigenous peoples' rights in Ecuador, and distinguishes the inapposite authorities on which Colombia relies.

– **Section IV** responds to Colombia's arguments on the special status of indigenous peoples under international law. Ecuador shows that significant harm has been caused to indigenous communities located on both sides of the border and to their ability to sustain a traditional subsistence existence. As with human rights generally, Ecuador demonstrates that the obligation to respect indigenous rights is not territorially limited and that specific targeting of indigenous peoples is not required for there to be a violation of international law. These communities should have been consulted and notified before spraying began.

– **In Section V**, Ecuador presents its views on the interrelationship between environmental protection and human rights. The conclusion is that the inter-relationship between unlawful damage to the human

environment and breach of human rights obligations cannot be ignored.

– Finally, **Section VI** sets out a summary of conclusions to be drawn from the previous sections.

Section II. Colombia's Violations of Human Rights

A. AERIAL SPRAYING HAS SERIOUSLY INJURED AFFECTED INDIVIDUALS

7.4 Colombia systematically dismisses the probative value of the evidence provided by Ecuador to support the breach of fundamental human rights, on the basis that it lacks "independently verified expert reports"[1249] or that witness statements provided are "vague"[1250] or of "doubtful weight"[1251]. Ecuador has already replied thoroughly in Chapter 3 to such accusations[1252]. To support its criticism of the evidence submitted by Ecuador of human rights violations, which consumes nearly 100 paragraphs of response to Ecuador's claims of human rights violations, Colombia provides the repeated refrain that the witnesses are "vague"[1253]. In Chapter 3 of this *Reply*, Ecuador has demonstrated, contrary to Colombia's attempt to claim otherwise in the *Counter-Memorial*, not only the

[1249] CCM, Chap. 9, para. 9.75.

[1250] CCM, Chap. 9, para. 9.124.

[1251] CCM, Chap. 9, para. 9.77.

[1252] *See supra* Chap. 3, paras. 3.23-3.27, 3.34-3.46.

[1253] *See e.g.* CCM, Chap. 9, paras. 9.77, 9.131.

specificity of the witness testimonies – in terms of the appearance of the spray mist, and the impacts on their eyes, skin, respiratory and digestive systems, crops and livestock – but also their remarkable consistency with one another, across different time periods and geographic locations; with the spray flight data obtained from the U.S. Government; with the effects of glyphosate-based herbicidal sprays; and with the labelling warnings and instructions provided by the manufacturers of the chemical products that Colombia uses in its spray mixtures.

7.5 Colombia seeks also to dismiss the confirming value of the reports of the UN Special Rapporteurs on the Right to Health, the Rights of Indigenous Peoples and the Right to Food. Colombia states that the views of the Special Rapporteur on the Right to Food are "in no way 'authoritative'"[1254]. It also dismisses the reports from this Rapporteur and the Special Rapporteur on the Rights of Indigenous People, claiming that they "are based on allegations of individuals and have no scientific basis"[1255]. Similarly, it asserts that the opinion of the Special Rapporteur on the Right to Health that there is "'credible, reliable evidence'" is merely a matter of "express[ing] his views" and "adds nothing to what he was told by his informants" and is not supported by any scientific evidence[1256].

[1254] CCM, Chap. 9, para. 9.91.

[1255] CCM, Chap. 9, para. 9.93. *See also* CCM, Chap. 9, para. 9.109.

[1256] CCM, para. 9.132.

Chapter 3 of this *Reply* addresses the value of the mission carried out by the Special Rapporteur on the Right to Health[1257]. Among other things, this expert took witness statements and gathered scientific evidence and engaged with Colombian authorities. The findings of other UN appointed experts, such as the Special Rapporteur on the Rights of Indigenous Peoples, are also of comparable rigour and independence. They all confirm Ecuador's arguments and evidence.

7.6 Colombia's assessment of the work of UN Special Rapporteurs misrepresents their independent and expert nature, and it also seeks to dismiss the evidentiary value of their reports. As explained in Chapter 3 of this *Reply*, the series of statements of local people, gathered at different times, in different locations and by different experts, including those appointed by the United Nations, matched with the flight path data, provide systematic and consistent evidence of the risks and the harm caused to the people living in the border areas[1258].

7.7 The record shows that, since 2000, the living conditions of the populations residing along the Ecuadorian side of the border have been significantly affected by Colombia's aerial sprayings. Ecuador has provided extensive evidence from first-hand observers, corroborating the fact that the harm is directly linked to the

[1257] *See supra* Chap. 3, paras. 3.65-3.70.

[1258] *See supra* Chap. 3, Sections I and II, esp. paras. 3.7, 3.38.

spraying of toxic herbicides which repeatedly took place in direct proximity to their homes and property.

7.8 As Colombia's arguments on the probative value of the evidence submitted by Ecuador have already been rebutted in Chapter 3 of this *Reply*, it is not necessary to address this matter further in this Chapter[1259]. However, Ecuador is bound to reaffirm in the clearest possible terms its concerns as to the serious human consequences of Colombia's past actions relevant to the present dispute. First, there is no doubt that tens of thousands of spraying operations have been conducted in direct proximity to the border. The repeated sprayings in the border region have been consistently mentioned in *all* witness statements submitted to the Court and are corroborated by the flight data now available in these proceedings[1260]. Equally relevant is that nearly all witnesses personally saw or felt the spray drift towards the Ecuadorian side of the border.

7.9 Second, the record shows that the spray drift has caused serious health problems. Two fundamental causes can be identified: the direct contact with the spray drift deposited directly over individuals, and the more indirect effects resulting from damage to food and water supplies and medicinal plants. With respect to the first cause, many witnesses on Ecuadorian soil and in direct

[1259] *See supra* Chap. 3, Sections I and II, esp. paras. 3.23-3.46.

[1260] *See supra* Chap. 3, Section I.

proximity with the planes saw the spray drift towards them, after which they felt the spray on their bodies[1261]. A clear example is provided by the statement of Witness 32 who was in his canoe as the spray fell directly on him and the surrounding water body[1262]. In this respect, the information provided by the witnesses has not been seriously challenged, and it cannot be. As regards the second and more indirect cause, the previous Chapters of the *Reply* have already clearly established the extent of environmental damage caused to the direct living environment of the affected populations[1263]. In short, the spray drift has given rise to serious risks and destroyed significant amounts of the subsistence crops of the affected individuals, causing food shortages. Drinking water has been polluted and other food such as fish or farm animals have been poisoned before being ingested by the local populations[1264].

7.10 Apart from the fact that they saw the spray drift falling on them and their property, all the witnesses also observed the direct consequences on their immediate surroundings. One witness explained how his subsistence crops died

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[1261] *See, e.g.*, Declaration of Witness 2, 16 Jan. 2009 (hereinafter "Witness 2 Declaration"). EM, Vol. IV, Annex 190; Declaration of Witness 4, 22 Dec. 2008 (hereinafter "Witness 4 Declaration"). EM, Vol. IV, Annex 192; Declaration of Witness 6, 16 Jan. 2009 (hereinafter "Witness 6 Declaration"). EM, Vol. IV, Annex 194; Declaration of Witness 11, 16 Jan. 2009 (hereinafter "Witness 11 Declaration"). EM, Vol. IV, Annex 199; Declaration of Witness 28, 17 Feb. 2009 (hereinafter "Witness 28 Declaration"). EM, Vol. IV, Annex 212; Declaration of Witness 33, 19 Feb. 2009 (hereinafter "Witness 33 Declaration"). EM, Vol. IV, Annex 217.

[1262] Declaration of Witness 32, 19 Feb. 2009 (hereinafter "Witness 32 Declaration"). EM, Vol. IV, Annex 216.

[1263] *See supra* Chap. 3, Section I.

[1264] *See e.g.*, *supra* Chap. 3, paras. 3.11, 3.82, 3.94-3.97; *see also* EM, paras. 9.70-9.74.

from top down, and not as is usual from the roots upwards[1265]. Others explained how the sprayings have affected the areas surrounding them, observing that the effects were strongest on the Colombian side of the border, which was directly targeted by the spray planes[1266]. On the Ecuadorian side of the border the damage was still significant as corroborated by all witnesses, and the damage diminished as the distance from the border grew. Finally, it must be stressed that the local populations did not have any doubt as to the origin of their symptoms. The health symptoms that they suffered were the same each time there were sprayings along the border.

7.11 Turning to the health consequences, these have been amply described in the written pleadings and well-documented through scientific, medical and witness reports. All of the witnesses who have been directly affected have declared under oath that they subsequently, although with different degrees of intensity, suffered health effects which correspond to the symptoms associated with the chemicals used in the spray mixture deposited by Colombia. These include notably: eye irritation[1267], skin rashes and bumps[1268], headaches and

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[1265] Declaration of Witness 18, 15 Jan. 2009 (hereinafter "Witness 18 Declaration"). EM, Vol. IV, Annex 204.

[1266] *See, e.g.*, Declaration of Witness 1, 16 Jan. 2009 (hereinafter "Witness 1 Declaration"). EM, Vol. IV, Annex 189; Declaration of Witness 3, 17 Jan. 2009 (hereinafter "Witness 3 Declaration"). EM, Vol. IV, Annex 191; Declaration of Witness 10, 19 Jan. 2009. EM, Vol. IV, Annex 198; Declaration of Witness 19, 17 Jan. 2009 (hereinafter "Witness 19 Declaration"). EM, Vol. IV, Annex 205.

[1267] *See, e.g.*, Declaration of Witness 5, 16 Jan. 2009 (hereinafter "Witness 5 Declaration"). EM, Vol. IV, Annex 193; Declaration of Witness 8, 16 Jan. 2009 (hereinafter "Witness 8

dizziness[1269], fever[1270], and gastrointestinal difficulties[1271]. The eyewitness testimonies are further corroborated by medical staff confronted with recurring

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Declaration"). EM, Vol. IV, Annex 196; Declaration of Witness 9, 16 Jan. 2009 (hereinafter "Witness 9 Declaration"). EM, Vol. IV, Annex 197; Declaration of Witness 12, 16 Jan. 2009 (hereinafter "Witness 12 Declaration"). EM, Vol. IV, Annex 200; Declaration of Witness 17, 16 Jan. 2009 (hereinafter "Witness 17 Declaration"). EM, Vol. IV, Annex 203; Declaration of Witness 20, 16 Jan.2009 (hereinafter "Witness 20 Declaration"), EM, Vol. IV, Annex 206; Declaration of Witness 22, 16 Jan. 2009 (hereinafter "Witness 22 Declaration"). EM, Vol. IV, Annex 208; Declaration of Witness 37, 19 Feb. 2009 (hereinafter "Witness 37 Declaration"). EM, Vol. IV, Annex 220; Declaration of Witness 39, 19 Feb. 2009 (hereinafter "Witness 39 Declaration"). EM, Vol. IV, Annex 222.

[1268] *See, e.g.*, Witness 1 Declaration, *op. cit.* EM, Vol. IV, Annex 189; Witness 2 Declaration, *op. cit.* EM, Vol. IV, Annex 190; Witness 3 Declaration, *op. cit.* EM, Vol. IV, Annex 191; Witness 4 Declaration, *op. cit.* EM, Vol. IV, Annex 192; Witness 5 Declaration. EM, Vol. IV, Annex 193; Witness 6 Declaration, *op. cit.* EM, Vol. IV, Annex 194; Declaration of Witness 7, 16 Jan. 2009 (hereinafter "Witness 7 Declaration"). EM, Vol. IV, Annex 195; Witness 8 Declaration, *op. cit.* EM, Vol. IV, Annex 196; Witness 9 Declaration, *op. cit.* EM, Vol. IV, Annex 197; Witness 11 Declaration, *op. cit*. EM, Vol. IV, Annex 199; Witness 12 Declaration, *op. cit.* EM, Vol. IV, Annex 200; Declaration of Witness 13, 15 Jan. 2009 (hereinafter "Witness 13 Declaration"). EM, Vol. IV, Annex 201; Declaration of Witness 14, 17 Jan. 2009. EM, Vol. IV, Annex 202; Witness 17 Declaration, *op. cit.* EM, Vol. IV, Annex 203; Witness 18 Declaration, *op. cit.* EM, Vol. IV, Annex 204; Witness 19 Declaration, *op. cit.* EM, Vol. IV, Annex 205; Witness 22 Declaration, *op. cit.* EM, Vol. IV, Annex 208; Declaration of Witness 23, 16 Jan. 2009 (hereinafter "Witness 23 Declaration"). EM, Vol. IV, Annex 209; Declaration of Witness 29, 16 Jan. 2009 (hereinafter "Witness 29 Declaration"). EM, Vol. IV, Annex 213; Declaration of Witness 30, 19 Feb. 2009 (hereinafter "Witness 30 Declaration"). EM, Vol. IV, Annex 214; Declaration of Witness 31, 27 Feb. 2009 (hereinafter "Witness 31 Declaration"). EM, Vol. IV, Annex 215; Witness 32 Declaration, *op. cit.* EM, Vol. IV, Annex 216; Witness 33 Declaration, *op. cit.* EM, Vol. IV, Annex 217; Declaration of Witness 34, 19 Feb. 2009 (hereinafter "Witness 34 Declaration"). EM, Vol. IV, Annex 218; Witness 37 Declaration, *op. cit.* EM, Vol. IV, Annex 220; Declaration of Witness 38, 19 Feb. 2009 (hereinafter "Witness 38 Declaration"). EM, Vol. IV, Annex 221; Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222.

[1269] *See, e.g.*, Witness 2 Declaration, *op. cit.* EM, Vol. IV, Annex 190; Witness 3 Declaration, *op. cit.* EM, Vol. IV, Annex 191; Witness 5 Declaration, *op. cit.* EM, Vol. IV, Annex 193; Witness 8 Declaration, *op. cit.* EM, Vol. IV, Annex 196; Witness 9 Declaration, *op. cit.* EM, Vol. IV, Annex 197; Witness 12 Declaration, *op. cit.* EM, Vol. IV, Annex 200; Witness 13 Declaration, *op. cit.* EM, Vol. IV, Annex 201; Witness 17 Declaration, *op. cit.* EM, Vol. IV, Annex 203; Witness 20 Declaration, *op. cit.* EM, Vol. IV, Annex 206; Witness 29 Declaration, *op. cit.* EM, Vol. IV, Annex 213; Witness 34 Declaration, *op. cit.* EM, Vol. IV, Annex 218.

[1270] *See, e.g.*, Witness 1 Declaration, *op. cit.* EM, Vol. IV, Annex 189; Witness 3 Declaration, *op. cit.* EM, Vol. IV, Annex 191; Witness 4 Declaration, *op. cit.* EM, Vol. IV, Annex 192; Witness 7 Declaration, *op. cit.* EM, Vol. IV, Annex 195; Witness 11 Declaration, *op. cit.* Vol. IV, Annex 199; Witness 17 Declaration, *op. cit.* EM, Vol. IV, Annex 203; Witness 22 Declaration, *op. cit.* EM, Vol. IV, Annex 208; Witness 29 Declaration, *op. cit.* EM, Vol. IV, Annex 213; Witness 34 Declaration, *op. cit.* EM, Vol. IV, Annex 218.

surges of epidemics following each round of spraying that displayed the same pattern of symptoms[1272].

7.12 This conclusion has also been reached by the UN Special Rapporteur on the Right to Health, Mr. Paul Hunt, who expressed his serious concerns relating to the human rights situation in the border regions affected by the sprayings, and particularly the grave physical and mental health effects. In his opinion,

> "There is *credible, reliable evidence* that the aerial spraying of glyphosate along the Colombia-Ecuador border damages the physical health of people living in Ecuador. There is also *credible, reliable evidence* that the aerial spraying damages their mental health. Military helicopters sometimes accompany the aerial spraying and the entire experience can be terrifying, especially for children. (Some children told me that, while they were in their school, it was sprayed.)
>
> This evidence is sufficient to trigger the precautionary principle. Accordingly, the spraying should cease until it is clear that it does not damage human health.

[1271] *See, e.g.*, Witness 1 Declaration, *op. cit.* EM, Vol. IV, Annex 189; Witness 3 Declaration, *op. cit.* EM, Vol. IV, Annex 191; Witness 4 Declaration, *op. cit.* EM, Vol. IV, Annex 192; Witness 5 Declaration, *op. cit.* EM, Vol. IV, Annex 193; Witness 7 Declaration, *op. cit.* EM, Vol. IV, Annex 195; Witness 8 Declaration, *op. cit.* EM, Vol. IV, Annex 196; Witness 9 Declaration, *op. cit.* EM, Vol. IV, Annex 197; Witness 11 Declaration, *op. cit.* EM, Vol. IV, Annex 199; Witness 12 Declaration, *op. cit.* EM, Vol. IV, Annex 200; Witness 17 Declaration, *op. cit.* EM, Vol. IV, Annex 203; Witness 19 Declaration, *op. cit.* EM, Vol. IV, Annex 205; Witness 20 Declaration, *op. cit.* EM, Vol. IV, Annex 206; Witness 22 Declaration, *op. cit.* EM, Vol. IV, Annex 208; Witness 29 Declaration, *op. cit.* EM, Vol. IV, Annex 213; Witness 31 Declaration, *op. cit.* EM, Vol. IV, Annex 215; Witness 32 Declaration, *op. cit.* EM, Vol. IV, Annex 216; Witness 33 Declaration, *op. cit.* EM, Vol. IV, Annex 217.

[1272] *See, e.g.*, Declaration of Dino Juan Sánchez Quishpe, 15 Jan. 2009. EM, Vol. IV, Annex 188; Witness 40 Declaration, *op. cit.* EM, Vol. IV, Annex 223; Confederation of Indigenous Nationalities of Ecuador (CONAIE) et al., *Technical Report of the International Commission on the Impacts in Ecuadorian Territory of Aerial Fumigations in Colombia*, p. 17 (19-22 July 2001). EM, Vol. IV, Annex 162.

> It would be manifestly unfair to require Ecuador to prove that the spraying damages human health because Ecuador does not have access to essential information that is required to make that assessment. For example, Ecuador does not know the precise composition of the herbicide that Colombia is using. Thus, Colombia has the responsibility to show that the spraying damages neither human health nor the environment"[1273].

Colombia challenges these conclusions by way of assertion, but provides no evidence to contradict them[1274]. It still withholds the precise elements and formulations of the various chemical mixtures it has aerially sprayed along or near the border with Ecuador.

7.13 Colombia seeks to down play the serious effects of the spray mixture by asserting that no evidence proving that affected populations have sought medical attention has been submitted to the Court[1275]. This supposed lack of need for medical attention would somehow underscore the benign nature of the chemical spray's effects on human health. Apart from the fact that medical records have been submitted by Ecuador in the form of contemporaneous medical inquest reports prepared by health professionals who examined victims in the days and weeks following exposure to the spray, numerous witnesses mention that they

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[1273] U.N. Press Release, "U.N. Special Rapporteur on the Right to the Highest Attainable Standard of Health, Paul Hunt, Ends Visit to Ecuador" (18 May 2007) (emphasis added). EM, Vol. IV, Annex 185.

[1274] CCM, Chap. 9, para. 9.132.

[1275] CCM, Chap. 7, paras. 7.133, 7.142. In paragraph 7.142, Colombia states the following: "In spite of the severe and wide-spread symptoms allegedly suffered by such a large number of people – a full-scale epidemic according to at least one of the witnesses – *none of them seems to have sought medical assistance, whether for themselves or for their children*". (Emphasis added).

sought medical attention where available, even if the treatment they received was rudimentary and not formally documented in the manner one may be accustomed to in the developed world[1276]. Thus, for instance, the affected populations in Mataje, Esmeraldas, visited the local nurse after the various spraying episodes[1277]. One of them was so sick that she had to be transported to the Esmeraldas Hospital[1278]. Another witness explained how he had to carry sick people on his back for over five hours in order to reach the hospital at San Lorenzo[1279]. Witnesses living within the Cofán-Bermejo Ecological Reserve recounted how they sought medical attention in the Health Centre General Farfán[1280]. A witness in Puerto Escondido, Sucumbíos, had to bring her children to the San José Clinic in Lago Agrio[1281]. Another explained how the people in his community would

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[1276] *See, e.g.*, Witness 1 Declaration, *op. cit.* EM, Vol. IV Annex 189; Witness 2 Declaration, *op. cit.* EM, Vol. IV, Annex 190; Witness 6 Declaration, *op. cit.* EM, Vol. IV, Annex 194; Witness 7 Declaration, *op. cit.* EM, Vol. IV, Annex 195; Witness 8 Declaration, *op. cit.* EM, Vol. IV, Annex 196; Witness 19 Declaration, *op. cit.* EM, Vol. IV, Annex 205; Declaration of Witness 21, 16 Jan. 2009 (hereinafter "Witness 21 Declaration"). EM, Vol. IV, Annex 207; Declaration of Witness 27, 17 Feb. 2009 (hereinafter "Witness 27 Declaration"). EM, Vol. IV, Annex 211; Witness 30 Declaration, *op. cit.* EM, Vol. IV, Annex 214; Witness 32 Declaration, *op. cit.* EM, Vol. IV, Annex 216; Witness 34 Declaration, *op. cit.* EM, Vol. IV, Annex 218; Declaration of Witness 36, 19 Feb. 2009 (hereinafter "Witness 36 Declaration"). EM, Vol. IV, Annex 219; Witness 37 Declaration, *op. cit.* EM, Vol. IV, Annex 220; Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222; Declaration of Witness 40, 20 Feb. 2009 (hereinafter "Witness 40 Declaration"). EM, Vol. IV, Annex 223; Declaration of Witness 41, 20 Feb. 2009 (hereinafter "Witness 41 Declaration"). EM, Vol. IV, Annex 224.

[1277] *See, e.g.*, Witness 30 Declaration, *op. cit.* EM, Vol. IV, Annex 214; Witness 32 Declaration, *op. cit.* EM, Vol. IV, Annex 216; Witness 33 Declaration, *op. cit.* EM, Vol. IV, Annex 217; Witness 34 Declaration, *op. cit.* EM, Vol. IV, Annex 218; Witness 37 Declaration, *op. cit.* EM, Vol. IV, Annex 220; Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222.

[1278] Witness 36 Declaration, *op. cit.* EM, Vol. IV, Annex 219.

[1279] Witness 40 Declaration, *op. cit.* EM, Vol. IV, Annex 223.

[1280] *See, e.g.*, Witness 27 Declaration, *op. cit.* EM, Vol. IV, Annex 211.

[1281] Witness 21 Declaration, *op. cit.* EM, Vol. IV, Annex 207.

first go to the traditional doctor, thereafter the health promoter of the community trained in Western medicine, and if need be to the San Lorenzo Hospital[1282]. All this medical assistance was sought in temporal proximity with the sprayings occurring along Ecuador's northern border. In most other cases, poorer families could not afford to seek medical care, often hours away. This is particularly true for the community of San Francisco 2, where the human rights damages were particularly severe. Witness 11 expressed her despair when acknowledging the lack of money to seek medical assistance[1283]. In fact, the people of San Francisco 2 could only resort to traditional medicinal plant cures, the effects of which were impaired by the sprayings[1284]. This particular issue is addressed further below, in the context of Ecuador's claim relating to the violations of the rights of indigenous peoples.

7.14 To complete this discussion on the human health effects of the aerial spraying along Ecuador's border, it is necessary to address what Colombia claims to be inconsistencies or divergences among witness statements submitted to the Court[1285]. The Court should not be surprised by Colombia's attack on the witness statements, since they undermine Colombia's case that there has been no harm caused by its actions. If the witness statements are treated by the Court as

[1282] Witness 41 Declaration, *op. cit.* EM, Vol. IV, Annex 224.

[1283] Witness 11 Declaration, *op. cit.* EM, Vol. IV, Annex 199.

[1284] *See supra* Chap. 3, para. 3.76-3.77. Witness 13 Declaration, *op. cit.* EM, Vol. IV, Annex 201.

[1285] CCM, Chap. 9, paras. 9.77, 9.124, 9.131.

probative – as Ecuador considers they should be – they constitute unchallenged proof of the harms to human health, crops, livestock and the environment claimed by Ecuador. Colombia has no choice other than to seek to discredit them, but it has failed in this effort. It is not a sign of inconsistency, for example, that the degree of harm to human health varies somewhat across time periods and geographic locations. In fact, the contents of the spray mixture used by Colombia varied, and some communities were hit more directly and more often than others by the spraying. What makes the testimonies consistent, amongst other considerations, is that the nature of the harms following spraying events is the same – it always affects the eyes, skin, respiratory and digestive systems in similar ways – even though the severity and duration of these symptoms felt by different individuals sometimes varies.

7.15 Thus, in evaluating the validity of the different witness statements, the Court is asked to take into account all relevant circumstances, most notably:

1. the fact that witnesses were affected in similar, even if not identical, ways – this is logical given that some were in direct proximity of the planes and the spray drift and thus felt the spray on their skin, while others saw the drift progressively coming towards them and could not escape, and yet others saw the activities from a distance of several kilometres away but were nevertheless affected through damage to their crops;

2. the fact that it is to be expected that different persons may react differently even to the same dose of exposure – some may suffer relatively mild symptoms, such as adult men in good health, others may have stronger and especially severe reactions, such as older persons, undernourished adults, and particularly infants with weaker immune systems – an observation that is widely corroborated by the witness statements where the special vulnerability of children is frequently mentioned; and

3. the material resources available to each affected individual to react to the sprayings differ – while some live closer to urban centres, or have easier access to professional medical assistance, or even possess subsistence crops in areas unaffected by the sprayings on which they could continue to sustain their health – many of the witnesses could not escape the direct consequences of the poisoning, or obtain medical attention, thus being forced to rinse their bodies, to drink and cook with contaminated water, to eat contaminated fish or subsistence crops, or to self-medicate with contaminated medicinal plants.

7.16 It comes as no surprise that some witnesses claim to suffer from long-term effects such as eye irritation. All these witnesses suffered from spraying operations prior to 2005 when Colombia said it changed the composition of its spray mix, switching from Roundup SL to GLY-41. These aspects have been dealt with in detail in Chapter 2 of the present *Reply*[1286]. However, it must be recalled that the U.S. Environmental Protection Agency recommended as early as

[1286] *See supra* Chap. 2, paras. 2.31-2.42.

2002 that Colombia abandon its use of the formulation then in use precisely because it could cause "irreversible eye damage"[1287].

7.17 Finally, on the question of causation, Colombia argues that without any conclusive scientific evidence no causal nexus can be established between the sprayings and the health effects reported in the witnesses' sworn statements[1288]. To be sure, no soil or water samples were collected immediately after spraying events. Nor were there teams of scientists stationed in the border areas waiting for these events so they could obtain such samples. Colombia itself made this impractical by repeatedly failing to allow Ecuador or the border populations to receive any advance notice of the sprayings. The remoteness of the affected regions, and the lack of roads and other infrastructure made communication and access to and from them especially difficult. Moreover, as Colombia well knows, although the spray mixtures deposited along the border with Ecuador were highly toxic, they were biodegradable in less than four weeks, meaning that no traces

[1287] United States Environmental Protection Agency, Office of Prevention, Pesticides, and Toxic Substances, *Report on Issues Related to the Aerial Eradication of Illicit Coca in Colombia: Response from EPA Assistant Administrator Johnson to Secretary of State,* p. 8 (Aug. 2002). ER, Vol. III, Annex 45. And, indeed, Colombia acknowledges in a footnote of its *Counter-Memorial* that it switched from Roundup SL to GLY-41 because of the inherent risk to human health, in particular eye problems. Footnote 312 reads as follows: "As of 2005, with the purpose of avoiding the possible effects associated with the use of the POEA surfactant contained in Roundup SL, *in particular the risk of eye irritation* to workers in charge of preparing the mix at the operation sites, the Colombian Government decided to use a new glyphosate-based formulated product, called GLY 41". CCM, para. 4.50, n. 312 (emphasis added).

[1288] CCM, Chap. 7, para. 7.141.

would appear in any soil or water samples that might be collected even as little as a month after spraying[1289].

7.18 What is remarkable on the question of causation is that all the evidence that has been presented points in one direction. The fact that so many witnesses and many more individuals have suffered from ill-effects merely serves to highlight the extent of the damage produced and underscores the credibility of Ecuador's case. Now that Ecuador has obtained the spray flight data, it has been able to connect temporally the sprayings with the harms testified to by the witnesses in their immediate aftermaths and locations; this further corroborates the witness testimonies. Also pointing in the same direction are the reports of the various UN Special Rapporteurs; the scientific studies of the effects of glyphosate and POEA on human health and crops; the labelling warnings and instructions provided by the manufacturers of these products (pursuant to legal requirements in States around the world); the banning of aerial spraying of pesticides in the European Union and many other national jurisdictions, based on the inherent risks of spray drift; and the spray flight data showing that Colombia's spray pilots

[1289] *See e.g.* Diplomatic Note DM/AL No. 25009, sent from the Ministry of Foreign Affairs of Colombia to the Ministry of Foreign Affairs of Ecuador, p. 3 (14 July 2001) ("Its half-life in soil is between 1 and 4 weeks at the most, and in tropical soils – such as ours – less than one week, and then it is biodegraded".). EM, Vol. II, Annex 42. *See also* Weller Report, p. 3. ER, Vol. II, Annex 3; Charles A. Menzie, Ph.D. & Pieter N. Booth, M.S., *Response to: "Critique of Evaluation of Chemicals Used in Colombia's Aerial Spraying Program, and Hazards Presented to People, Plants, Animals and the Environment in Ecuador," As Presented in: Counter-Memorial of the Republic of Colombia, Appendix*, pp. 25-26 (Jan. 2011) (hereinafter "Menzie & Booth Report"). ER, Vol. II, Annex 6.

regularly violated – on tens of thousands of spray flights along or near the border with Ecuador – the operational requirements (in terms of flight speed, altitude, droplet size, application rate and time of day and weather conditions) that Colombia itself deemed necessary to control spray drift.

7.19 The evidence is cumulative, in the sense contemplated by the Court when it indicated, in its first case, that there exists "a series of facts linked together [that lead] logically to a single conclusion"[1290]. The symptoms observed are identical throughout all affected areas, they correspond to those endured also on the Colombian side of the border, they follow closely upon the precise locations of spraying events, and they are thus clearly not the consequence of some oil refining activity in one part of the country, or of the alleged "natural" deterioration of soil fertility as a result of so-called "slash and burn" agriculture[1291]. Independently of the question of the *quantum* of damages and Ecuador's capacity to substantiate *all* material damages invoked, which are questions dealt with in Chapter 8, Ecuador must underscore that the persistent repetition of spraying activities along the border notwithstanding clear objections by Ecuador amounts to a serious breach of international human rights law committed by Colombia, and the evidence in the record is sufficient to lead the Court to declare such a finding.

[1290] *Corfu Channel (United Kingdom v. Albania), Judgment, Merits, I.C.J. Reports 1949*, p. 18.

[1291] CCM, Chap. 7, para. 7.161.

B. AERIAL SPRAYING VIOLATES THE FUNDAMENTAL HUMAN RIGHTS OF AFFECTED INDIVIDUALS

7.20 Colombia's view of human rights law is peculiarly and unsustainably narrow. It treats the right to life as if it were confined solely to cases of arbitrary killing. This is not correct. The Inter-American Court of Human Rights has unambiguously defined the right to life as a right that "includes not only the right of every human being not to be deprived of his life arbitrarily, but also the right that he will not be prevented from having access to conditions that guarantee a decent existence"[1292]. It is the Inter-American Court of Human Rights, and not Ecuador's willingness to "recycle" its arguments[1293], that recognizes a connection between a number of distinct human rights, such as the right to health and to food and access to clean water with the right to a decent existence[1294]. Ecuador has demonstrated in its *Memorial*[1295], and now even more clearly in Chapter 3, the uniform pattern of harm caused by Colombia. As explained below, the States Parties to the American Convention on Human Rights undertake to respect the rights recognized herein, including the right to life, and thus including also the right to a decent existence. For many people in border areas the cumulative effect

[1292] *Villagran Morales et al. v. Guatemala, Judgment*, IACHR, Series C No. 77, para. 144 (19 Nov. 1999). *See also Case of the Indigenous Community Yakye Axa v. Paraguay*, *Judgment*, IACHR, Series C No. 125, para. 161 (17 June 2005) ("the right to life . . . includes not only the right of every human being not to be arbitrarily deprived of his life, but also the right that conditions that impede or obstruct access to a decent existence should not be generated".); UNHRC, *General Comment 6 on Article 6*, U.N. Doc. HRI/GEN/1/Rev.1, pp. 6-7 (29 July 1994).

[1293] CCM, Chap. 9, paras. 9.63, 9.79.

[1294] EM, Chap. 9, paras. 9.43-9.48.

[1295] EM, Chap. 6.

of persistent spraying of toxic herbicides has removed elements that provide basic support for the enjoyment of a decent existence.

7.21 With regard to the right to a healthy environment, Colombia fails to see, in contrast to its domestic legal system, that the right to a healthy environment is closely related to the enjoyment of other fundamental rights. Colombia dismisses the material contribution to the Inter-American system of the *Yakye Axa Case*, which establishes the connection between the right to a healthy environment and the right to a decent life, on the basis of its supposed non-extra-territorial application. Colombia here confuses the normative content of the right with the related State obligations to respect and ensure protection of those rights. Colombia also falls into superfluous technicalities by arguing that the right recognized in Article 24 of the Banjul Charter is not related to the right to a healthy environment, simply because it is formulated as a right to a "satisfactory environment"[1296]. This is semantics that focuses on form not substance: the decision of the African Commission on Human and Peoples Rights in the *Ogoniland Case* shows that the objectives pursued by both formulations are the same[1297].

[1296] CCM, Chap. 9, para. 9.117.

[1297] EM, Chap. 9, paras. 9.80-9.82. *See also* Kaniye Ebeku, "The Right to a Satisfactory Environment and the African Commission", 3 *Afr. Hum. Rts. L. J.* 149, 163 (2003); Justice C. Nwobike, "The African Commission on Human and Peoples' Rights and the Demystification of Second and Third Generation Rights under the African Charter", 1 *Afr. J. Legal Stud.* 129, 139

7.22 With regard to the right to private life, Colombia decides to follow the wording used by another regional human rights body. Referring to the *López Ostra Case* in the European system, Colombia considers that, in order to affect the right to private life, pollution needs to be "severe" and that in the present case the pollution is minimal and hence cannot interfere with home or private life. But the severity of pollution can only be measured by its actual or likely effects. In the present case, the impact on the private and family life of those affected would appear to be more harmful and significant over the long term than in *López Ostra*, where the pollution caused foul odours rather than ill health or loss of crops and the basic means of subsistence[1298]. Colombia's characterisation of the present situation as "*de minimis* pollution" grossly misrepresents the reality, which is far

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(2005); Dinah Shelton, "Decision Regarding Communication 155/96 (Social and Economic Rights Action Centre/Centre for Economic and Social Rights v. Nigeria)," 96 *Am. J. Int'l. L.* 937 (2002).

[1298] *López Ostra v. Spain, Judgment*, ECHR, Series A no. 303-C, paras. 49-51 (9 Dec. 1994):

"49. On the basis of medical reports and expert opinions produced by the Government or the applicant (see paragraphs 18-19 above), the Commission noted, inter alia, that hydrogen sulphide emissions from the plant exceeded the permitted limit and could endanger the health of those living nearby and that there could be a causal link between those emissions and the applicant's daughter's ailment's.

50. In the Court's opinion, these findings merely confirm the first expert report submitted to the Audiencia Territorial on 19 January 1989 by the regional Environment and Nature Agency in connection with Mrs. López Ostra's application for protection of fundamental rights. Crown Counsel supported this application both at first instance and on appeal (see paragraphs 11 and 13 above). The Audiencia Territorial itself accepted that, without constituting a grave health risk, the nuisances in issue impaired the quality of life of those living in the plant's vicinity, but it held that this impairment was not serious enough to infringe the fundamental rights recognised in the Constitution (see paragraph 11 above).

51. Naturally, severe environmental pollution may affect individuals' well-being and prevent them from enjoying their homes in such a way as to affect their private and family life adversely, without, however, seriously endangering their health".

more serious for those affected than acknowledged by the *Counter-Memorial*[1299]. If a lower level of harmful pollution qualifies as a violation of the right to private life in *López Ostra*, then it follows that there is a comparable, if not more egregious, violation of the right to private life on the present facts.

C. TARGETING

7.23 It is not necessary for Ecuador to show that Colombia's aerial spraying explicitly "targeted" anyone in Ecuador[1300]. The human rights case law concerned with pollution impacts on health and private life normally involves unintended and incidental consequences, and these are no less a violation[1301]. All these cases have common features. First, there is some kind of nuisance – a chemical plant, smelter, tannery, mine or waste disposal site, for example. Second, there is a failure to take adequate preventive measures to control these known sources of risk to life, health, private life or property. In none of the cases are the victims "targeted" in any sense.

[1299] CCM, Chap. 9, para. 9.142.

[1300] CCM, Chap. 9, paras. 9.13-9.14.

[1301] *Maya Indigenous Communities of the Toledo District v. Belize, Judgment*, Inter-Am. C.H.R., Report No. 40/04, Case 12.053, paras. 147-154 (12 Oct. 2004); *Ilmari Lansman et al. v. Finland*, ICCPR Comm. No. 511/1992, para. 9.4 (1996); *López Ostra v. Spain*, *Judgment*, ECHR, Series A no. 303-C, para. 58 (9 Dec. 1994); *Guerra and Others v. Italy, Judgment*, ECHR, Reports of Judgments and Decisions 1998 I, para. 60 (19 Feb. 1998); *Fadeyeva v. Russia* [2005] ECHR 376, para. 134; *Öneryildiz v. Turkey* [2004] ECHR 657; *Case of Taskin and Others v. Turkey, Judgment*, ECHR (10 Nov. 2004), paras. 113-119; *Tatar v Romania*, no. 67021/01 *ECHR* (2009), para 88; *Budayeva, al. v Russia*, *Judgment*, no. 15339/02, ECHR (2008).

7.24 It is clear that Colombia has failed to act diligently in controlling and monitoring the spraying operation, and it has been reckless in failing to take the necessary measures to prevent transboundary effects. As detailed in Chapters 2, 4, and in the previous Chapter, inappropriate chemicals were used, aircraft ill-suited for aerial spraying were employed, and the Environmental Management Plan ("EMP"), which sets out the operating requirements for the spray planes, was lax and inadequately enforced. These requirements were intended to protect human health, food and water supplies, and the environment from harmful effects of a highly toxic spray, including harmful effects in Ecuador. These are the kinds of harmful impacts that the deposit of toxic herbicides will inevitably and predictably cause if spraying is carried out carelessly or without regard for the consequences, as has been the case. Moreover, whatever may be the position within Colombia, it is also clear that Colombia took no steps to notify or warn either the people residing in Ecuador's border regions, or the Ecuadorian authorities, in advance of the spraying. Those likely to be affected were thus given no warning and no chance to take precautions to protect themselves from the spray.

7.25 All of these failures by Colombia – failing to exercise diligent control over the operations of the spray planes, failing to warn those likely to be harmed, failing to enforce the conditions applicable to aerial spraying – are typical of the cases on the harmful effects of pollution under all of the relevant human rights

treaties, including the American Convention on Human Rights and the ICCPR, to which both Ecuador and Colombia are parties. Ecuador has set out its case on all of these issues in the *Memorial* and there is no need to repeat it here[1302]. To reiterate: none of the cases requires that those affected must have been "targeted".

7.26 Nor can Colombia justify or excuse the spraying that has actually taken place. The human rights case law demonstrates that States must balance the interests of the community in eradicating drug plantations against the harm to individual human rights[1303]. By failing to comply with or enforce its own EMP, Colombia has carried out a spraying operation that disregards the harmful impact on humans. The Inter-American Commission on Human Rights' decision in *Maya Indigenous Community of the Toledo District v. Belize* is instructive on this point. The Commission found that:

> "the State failed to put into place adequate safeguards and mechanisms, to supervise, monitor and ensure that it had sufficient staff to oversee that the execution of the logging concessions would not cause further environmental damage to Maya lands and communities"[1304].

In this respect, Colombia's spraying programme has failed the most elementary test of compatibility with or respect for fundamental human rights for exactly the

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[1302] EM, Chapter 9.

[1303] *Maya Indigenous Communities of the Toledo District v. Belize, Judgment*, Inter-Am. C.H.R., Report No. 40/04, Case 12.053, para. 150 (12 Oct. 2004).

[1304] *Ibid.*, para. 147.

same reasons that it fails the test of due diligence in the prevention of transboundary harm.

Section III. The "Territoriality" of Human Rights Obligations

7.27 One of the central arguments in its *Counter-Memorial* is that Colombia is under no international law obligation to respect and protect the human rights of local populations and indigenous peoples living outside its territory or not falling under its jurisdiction[1305]. To justify this claim, Colombia relies heavily on the Judgment of the European Court of Human Rights in *Banković v. Belgium*[1306]. This argument is surprising since *Banković* dealt with a situation in which the alleged harm felt as a result of the violation occurred on the territory of a State that was not a party to the European Convention on Human Rights. In the present case, on the contrary, Colombia and Ecuador are both parties to the American Convention, the ICCPR and ILO Convention No. 169. As a consequence, any comparison with the situation of Yugoslavia at the time of the *Banković* case is misplaced. Moreover, as this Court observed in the provisional measures phase of *Georgia v. Russia*, the question whether a human rights treaty applies extra-territorially is essentially a question of interpretation, to be determined according

[1305] CCM, Chap. 9, para. 9.15 *et seq.*

[1306] CCM, Chap. 9, paras. 9.25-9.31.

to the ordinary meaning and in light of the object and purpose of each treaty (Vienna Convention on the Law of Treaties, Article 31)[1307].

7.28 As further elaborated below, Ecuador's views on the territoriality of human rights obligations in the context of two States within the Inter-American juridical system and legal space are as follows:

- First, Colombia and Ecuador are part of a common legal space at the regional level (*un espace juridique commun*) relating to the protection of human rights and indigenous peoples.
- Second, from this it follows that Colombia and Ecuador are subject to an international public order of human rights which does not allow for loopholes in the effective protection of human rights for any part of their populations.
- Third, Colombia is under an obligation not to frustrate the protection of human rights in the regions adjacent to its borders.

[1307] *Case Concerning Application of the International Convention on the Elimination of All Forms of Racial Discrimination (Georgia v. Russian Federation), Provisional Measures Order, I.C.J. Reports 2008*, p. 386, para. 109 ("Whereas the Court observes that there is no restriction of a general nature in CERD relating to its territorial application; whereas it further notes that, in particular, neither Article 2 nor Article 5 of CERD, alleged violations of which are invoked by Georgia, contain a specific territorial limitation ; and whereas the Court consequently finds that these provisions of CERD generally appear to apply, like other provisions of instruments of that nature, to the actions of a State party when it acts beyond its territory".).

In this context, Colombia's position fails to appreciate the approach adopted in the context of the ACHR, and other applicable treaties. Equally, as already explained in the previous Chapter, one may also conclude that Colombia's actions to combat illicit drug crops without having regard for the human rights of neighbouring populations amount to an abuse of rights under the 1988 Narcotics Convention and a violation of Articles 2 and 14(2) thereof[1308].

A. THE SO-CALLED "TERRITORIALITY" OF HUMAN RIGHTS OBLIGATIONS

7.29 To support its argument that it has no obligations under international law to respect the human rights of neighbouring populations, Colombia resorts to a narrow and literal interpretation of the jurisdictional clauses contained in three principal human rights conventions. With respect to the American Convention on Human Rights, Colombia interprets Article 1 as limiting Colombia's obligations to its own territory or to individuals under its jurisdiction, *i.e.*, under its effective control. Colombia draws these conclusions from its interpretation of the *Banković* decision of the European Court of Human Rights and from the Advisory Opinion of this Court in the *Wall Case*[1309].

7.30 With respect to the case law of the European Court of Human Rights, Colombia relies on the *Banković Case*, in which the Court refused to exercise its

[1308] *See, e.g.*, *supra* Chap. 6, paras. 6.10-6.28, 6.76-6.84.

[1309] CCM, Chap. 9, paras. 9.17-9.20, 9.25-9.32.

jurisdiction because the contested acts – aerial bombing by NATO forces – could not be considered as falling under the jurisdictional requirements contained in Article 1 of the European Convention on Human Rights. Colombia asserts that "the argument that State action could 'affect' human rights extraterritorially was explicitly rejected by the European Court of Human Rights"[1310]. That is not what the Court in fact decided, having regard to its considerations about the European legal space and the fact that Yugoslavia was not a part of it[1311]. Moreover, Colombia fails to realize that the *Banković Case* turns on the particular facts, not least that the military attacks were performed *outside* the regional scope of the European Convention, as the Federal Republic of Yugoslavia was not a party to the European Convention when the attacks occurred[1312]. By contrast, Ecuador and Colombia are parties to the American Convention and ILO Convention No. 169.

7.31 Moreover, the wording of the American Convention on Human Rights is inconsistent with Colombia's narrowly construed approach to territorial interpretation. Article 1(1) of the American Convention provides that:

> "The States Parties to this convention undertake to respect the rights and freedoms recognized herein and to ensure to all persons

[1310] CCM, Chap. 9, para. 9.26.

[1311] *Banković et al. v. Belgium et al., Decision on Admissibility*, Eur.Ct.H.R. Application No. 52207/99, para. 80 (2001).

[1312] *See ibid.*, para. 42.

> subject to their jurisdiction the free and full exercise of those rights and freedoms…".

The obligation to "respect" is not synonymous with the obligation to "ensure". Even if indigenous peoples within Ecuador are not subject to the jurisdiction of Colombia, Colombia nevertheless has an obligation to respect their rights – an obligation identical to the requirements of Article 14(2) of the 1988 Narcotics Convention[1313] – and Ecuador is entitled to invoke such respect. Despite the difference in wording of the ICCPR, the same argument was accepted by the UN Human Rights Committee. The Committee held in 1981 that "it would be unconscionable to so interpret the responsibility under Article 2 of the Covenant as to permit a state party to perpetrate violations of the Covenant on the territory of another state, which violations it could not perpetrate on its own territory"[1314]. That is precisely Ecuador's argument.

7.32 The circumstances surrounding the present case thus fall within the terms of Article 1 of the American Convention and Article 2(1) of the ICCPR, as well as ILO Convention No. 169. To exclude from the protection offered by these instruments acts committed in one Contracting State but which produce effects in the territory of another Contracting State would also run counter to the object and purpose of these instruments. In the Preamble of the American Convention, the States Parties recognize "that the essential rights of man are not derived from

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[1313] *See supra* Chap. 6, paras. 6.10-6.28.

[1314] *Delta Saldias de Lopez v. Uruguay*, ICCPR Comm. No. 52/1979, para. 12.3 (29 July 1981).

one's being a national of a certain state, but are based upon attributes of the human personality, and that they therefore justify international protection in the form of a convention reinforcing or complementing the protection provided by the domestic law of the American states"[1315]. These States also expressed their conviction that "the ideal of free men enjoying freedom from fear and want can be achieved *only if conditions are created whereby everyone may enjoy* his economic, social, and cultural rights, as well as his civil and political rights"[1316]. Ecuador submits that "[e]xtraterritorial conduct of the States Parties contrary to the observance of human rights enshrined in the Convention is hardly compatible with such reaffirmation"[1317].

7.33 Colombia states that, in the interests of economy, it will not repeat, for each of the human rights treaties individually discussed, its point that "various human rights instruments, and in particular those which limit their scope to persons 'within' or 'subject' to the jurisdiction of the Respondent State, do not apply to the case of alleged injury caused incidentally by spray drift from lawful activities of a State on its own territory"[1318]. Nevertheless, it proceeds to do so.

[1315] American Convention on Human Rights, O.A.S. Treaty Series No. 36, 1144 UNTS 123, preamble (18 July 1978).

[1316] *Ibid*. (emphasis added).

[1317] *See* L. Loucaides, "Determining the Extra-territorial Effect of the European Convention: Facts, Jurisprudence and the *Banković* Case" in *The European Convention on Human Rights: Collected Essays*, p. 77 (Leiden: Martinus Nijhoff Publishers, 2007).

[1318] CCM, Chap. 9, para. 9.49.

However, when contesting the violation of each individual right claimed by Ecuador, Colombia fails to demonstrate that such instruments limit their scope to persons "within" or "subject" to the jurisdiction, or to otherwise prove its point[1319].

7.34 Although Colombia tries at length to argue that human rights obligations do not apply to transboundary claims, this exercise is not carried out for each of the nine rights on which Colombia purports to respond. It engages in rebuttal for only five out of nine rights invoked by Ecuador. For the right to humane treatment and the right to private life, Colombia is ready to *assume* that those rights could be applicable to Colombia's conduct[1320]; with regard to the right to property and the right to information, Colombia makes no reference whatsoever to the issue of extra-territoriality[1321].

7.35 Moreover, with regard to the rights to life, health, food, water and healthy environment, for which it argues their non-extraterritorial application, Colombia's arguments are unpersuasive. Colombia states that most of these rights are "essentially territorial"[1322]. This can only mean that at least some element of these rights can be extra-territorial. To support its argument, Colombia cites

[1319] CCM, Chap. 9, paras. 9.49-9.50.

[1320] CCM, Chap. 9, paras. 9.130, 9.140.

[1321] CCM, Chap. 9, paras. 9.119-9.125, 9.144-9.152.

[1322] CCM, Chap. 9, paras. 9.64, 9.72, 9.85, 9.114.

selectively from human rights treaties or from General Comments of the Committee on Economic, Social and Cultural Rights[1323]. It reproduces text which refers to the territorial State's obligation to *ensure* those rights[1324]. However, Colombia generally fails to cite the relevant passages of these General Comments[1325] or articles of human right treaties, which formulate the obligation of States to *respect* human rights or which declare the existence of the right under international law. The existence of an obligation to ensure those rights by the territorial State does not contradict the existence of an obligation to respect human rights extra-territorially.

B. THE CONCEPTS OF A COMMON LEGAL SPACE AND AN INTERNATIONAL PUBLIC ORDER OF HUMAN RIGHTS AT THE REGIONAL LEVEL

7.36 The preceding conclusions are reinforced by the fact that both Ecuador and Colombia are Parties to the American Convention on Human Rights and

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[1323] CCM, Chap. 9, paras. 9.80, 9.87-9.89, 9.91. With regard to the right to food, Colombia cites an excerpt of General Comment No. 12, which actually falls under the heading "implementation at the national level". General Comment No. 12 has also other sections, such as those referring to "normative content" or to "obligations and violations", in addition to a section on "international obligations", which refers expressly to the need to "respect the enjoyment of the right to food in other countries". *See* U.N. Committee on Economic, Social and Cultural Rights, *General Comment No. 12: The Right to Adequate Food (Article 11)*, U.N. Doc E/C.12/1999/5, para. 36 (12 May 1999) ("States parties *should take steps to* respect the enjoyment of the right to food in other countries…").

[1324] CCM, Chap. 9, paras. 9.64, 9.72-9.73, 9.85-9.90.

[1325] In addition to the example mentioned above on the General Comment on the Right to Food, see also U.N. Committee on Economic, Social and Cultural Rights, *General Comment 14: The Right to the Highest Attainable Standard of Health*, U.N. Doc. E/C.12/2000/4, para. 33 (11 Aug. 2000) ("The obligation to *respect* requires States to refrain from interfering directly or indirectly with the enjoyment of the right to health".) (Emphasis in original).

other relevant or applicable instruments. The object and purpose of the American Convention is to reinforce the protection of human rights within the Americas. As mentioned in the *Memorial* and clearly supported by scholars who have analysed the Inter-American human rights legal system[1326], the American Convention has instituted a common legal space (*un espace juridique commun*) which does not allow for a vacuum in the protection of human rights within this geographical area[1327]. In that sense, the American Convention established an international public order of human rights which prescribes that the human rights of individuals within this common legal space must be respected. The concept of common legal space was first developed in the case law of the European Court of Human Rights, then adopted by the Inter-American Court of Human Rights. In this respect, the Inter-American Court of Human Rights has adopted an extensive interpretation of the obligations contained in the Inter-American Declaration of Human Rights and the American Convention on Human Rights, and has resorted frequently to direct references from the case law of the European Court of Human Rights. As stated in Ecuador's *Memorial*, both judicial institutions are

[1326] EM, Chap. 9, para. 9.9.

[1327] *Ibid.* (quoting American Convention on Human Rights, Art. 1, O.A.S. Treaty Series No. 36, 1144 UNTS 123 (18 July 1978): "The States Parties to this Convention undertake to respect the rights and freedoms recognized herein and to ensure to all persons subject to their jurisdiction the free and full exercise of those rights and freedoms, without any discrimination. . . ").

increasingly influenced by each other's jurisprudence and a process of cross-fertilization characterizes the evolution of their case law[1328].

1. The Inter-American Declaration of Human Rights

7.37 The extra-territorial application of the Inter-American Declaration of Human Rights was stressed in *Alejandre and Others v. Cuba*[1329]. The Cuban Air Force was alleged to have shot down two civil aircraft in international air space outside the territorial jurisdiction of Cuba. A claim was filed before the Inter-American Commission on Human Rights by relatives of the victims on the basis of Articles 1 (right to life) and 18 (right to a fair trial) of the Inter-American Declaration of Rights and Duties of Man. The Commission said that it was competent *ratione materiae* and *ratione personae* to hear the case. As to its *ratione loci* jurisdiction, the Commission stated:

> "The essential rights of the individual are proclaimed in the Americas on the basis of equality and non discrimination, 'without distinction as to race, nationality, creed, or sex.' Because individual rights are inherent to the human being, all the American states are obligated to respect the protected rights of any person subject to their jurisdiction. Although this usually refers to persons who are within the territory of a state, in certain instances it can refer to extraterritorial actions, when the person is present in the territory of a state but subject to the control of another state, generally through the actions of that state's agents abroad. *In principle, the investigation refers not to the nationality of the*

[1328] EM, Chap. 9, para. 9.40.

[1329] *Armando Alejandre, Jr., Carlos Costa, Mario De La Pena, and Pablo Morales (Cuba)*, Inter-Am. C.H.R., Report No. 86/99, Case 11.589, para. 23 (29 Sept. 1999).

alleged victim or his presence in a particular geographic area, but to whether, in those specific circumstances, the state observed the rights of a person subject to its authority and control"[1330].

7.38 Likewise, in *Saldaño v. Argentina,* contrary to what was alleged by Colombia in its *Counter-Memorial*[1331], the Commission declared:

> "The Commission does not believe, however, that the term 'jurisdiction' in the sense of Article 1(1) is limited to or merely coextensive with national territory. Rather, the Commission is of the view that a state party to the American Convention may be responsible under certain circumstances *for the acts and omissions of its agents which produce effects or are undertaken outside that state's own territory*. This position finds support in the decisions of European Court and Commission of Human Rights which have interpreted the scope and meaning of Article 1 of the European Convention for the Protection of Human Rights and Fundamental Duties (European Convention). Article 1 of that instrument, on which Article 1(1) of the American Convention was largely patterned, stipulates that the high contracting parties 'shall secure to everyone *within their jurisdiction* the rights and freedoms defined in Section 1 of this Convention'."[1332].

7.39 In the *Saldaño* case, the important point of direct relevance for Ecuador's argument is that the American Declaration was found to be applicable to "*the acts and omissions of its agents which produce effects or are undertaken outside that state's own territory*"[1333]. That is precisely the situation in the present

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[1330] *Ibid*, para. 23 (emphasis added).

[1331] CCM, Chap. 9, paras. 9.40-9.43.

[1332] *Saldaño v. Argentina, Judgment*, Inter-Am.C.H.R, Report No. 38/99, para. 17 (11 Mar. 1999) (emphasis added).

[1333] *Ibid.* (emphasis added).

proceedings – the acts or omissions of agents of Colombia have produced harmful effects outside Colombian territory. Consequently, the Declaration is implicated.

7.40 It should be further noted that in *Coard v. United States*, the Inter-American Commission stated:

> "While the extraterritorial application of the American Declaration has not been placed at issue by the parties, the Commission finds it pertinent to note that, under certain circumstances, the exercise of its jurisdiction over acts with an extraterritorial locus will not only be consistent with but required by the norms which pertain. The fundamental rights of the individual are proclaimed in the Americas on the basis of the principles of equality and non-discrimination – 'without distinction as to race, nationality, creed or sex.' *Given that individual rights inhere simply by virtue of a person's humanity, each American State is obliged to uphold the protected rights of any person subject to its jurisdiction*. While this most commonly refers to persons within a state's territory, it may, under given circumstances, *refer to conduct with an extraterritorial locus where the person concerned is present in the territory of one state, but subject to the control of another state* – usually through the acts of the latter's agents abroad. In principle, the inquiry turns not on the presumed victim's nationality or presence within a particular geographic area, but on whether, under the specific circumstances, *the State observed the rights of a person subject to its authority and control*"[1334].

7.41 If shooting down an aircraft in international airspace constitutes the exercise of authority or control over the victims, then *a fortiori* spraying toxic herbicides that foreseeably drift over the territory of another State will likewise

[1334] *Coard* v. *United States, Judgment*, Inter-Am.C.H.R., Report No. 109/99, Case 10.951, para. 37 (29 Sept. 1999) (emphasis added).

amount to the exercise of authority or control over the victims for the purposes of applying the American Declaration extraterritorially.

2. *Case Law of the Inter-American Court of Human Rights*

7.42 What is true for the Inter-American Declaration is equally true for the American Convention on Human Rights. The concept of a common legal space prevailing among the States Parties to the Convention can be observed in the Preamble to the American Convention, where it is stated that the signatory States affirm "their intention to consolidate in this hemisphere, within the framework of democratic institutions, a *system of personal liberty and social justice* based on respect for the essential rights of man"[1335]. In the Preamble, the signatory States also recognize that:

> "the essential rights of man are not derived from one's being a *national of a certain state*, but are based upon attributes of the human personality, and that they therefore *justify international protection* in the form of a convention reinforcing or complementing the protection provided by the domestic law of the American states"[1336].

7.43 The Inter-American Court of Human Rights has retained a flexible vision of its *ratione loci* jurisdiction embracing the entire space covered by all the States

[1335] American Convention on Human Rights, preamble, O.A.S. Treaty Series No. 36, 1144 UNTS 123 (18 July 1978) (emphasis added).

[1336] *Ibid.* (emphasis added).

Parties to the American Convention on Human Rights. On that basis, the Court affirms its jurisdiction over "the inter-American system" as a whole.

7.44 In its second Advisory Opinion, *The Effect of Reservations on the Entry into Force of the American Convention on Human Rights*, the Inter-American Court of Human Rights spelled out the objective character of obligations arising out of multilateral human rights treaties:

> "The Court must emphasize, however, that modern human rights treaties in general, and the American Convention in particular, are not multilateral treaties of the traditional type concluded to accomplish the reciprocal exchange of rights for the mutual benefit of the contracting States. Their object and purpose is the protection of the basic rights of individual human beings *irrespective of their nationality, both against the State of their nationality and all other contracting States*. In concluding these human rights treaties, the States can be deemed to submit themselves to a legal order within which they, for the common good, assume various obligations, not in relation to other States, but towards all individuals within their jurisdiction"[1337].

7.45 More importantly, the Inter-American Court of Human Rights directly referred to the notion of common public order developed by the European Commission on Human Rights in *Austria v. Italy*, and endorsed it by affirming its particular relevance with regard to the American Convention ("apply with even greater force to the American Convention")[1338]. Finally, the Inter-American

[1337] *The Effect of Reservations on the Entry into Force of the American Convention on Human Rights (Arts. 74 and 75)*, *Advisory Opinion OC-2/82*, IACHR, Series A No. 2, para. 29 (24 Sept. 1982) (emphasis added).

[1338] *Ibid.* at paras. 29-31 (24 Sept. 1982).

Court of Human Rights developed the concept of common legal space established through the American Convention in its tenth Advisory Opinion, *Interpretation of the American Declaration of the Rights and Duties of Man*:

> "The evolution of the here relevant 'inter-American law' mirrors on the regional level the developments in contemporary international law and specially in human rights law, which distinguished that law from classical international law to a significant extent. That is the case, for example, with the duty to respect certain essential human rights, which is today considered to be an erga omnes obligation"[1339].

7.46 Hence, the concepts of common legal space and public order have been embraced by the Inter-American Court of Human Rights, which interprets its mission so as to secure total protection of the human rights enshrined in the American Convention throughout the entire region concerned, and to avoid a vacuum where certain individuals cannot benefit from the system of protection.

3. The Legal Consequences Flowing from the Concepts of Common Legal Space and Public Order of Human Rights

7.47 The situation where extra-territorial effects are produced *within* the common legal space is totally different from the situation where the effects take place in a State which is not a member of that common legal space[1340]. To that

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[1339] *Interpretation of the American Declaration of the Rights and Duties of Man within the Framework of Article 64 of the American Convention on Human Rights, Advisory Opinion OC-10/89*, IACHR, Series A No. 10, para. 38 (14 July 1989).

[1340] Emmanuel Decaux distinguishes between: "la *compétence extra-territoriale interne*, celle qu'un Etat exercerait à l'intérieur de l'espace commun des Parties, et la *compétence extra-*

extent, the *Banković* decision, relied on by Colombia, is simply not relevant to the circumstances of the present case.

7.48 The American Convention on Human Rights contains two types of obligations incumbent upon the Contracting States. On the one hand, the Convention imposes positive obligations to secure the enjoyment of fundamental human rights, and on the other, the Convention imposes negative obligations to abstain from violating (or from failing to "respect") the rights enshrined in the Convention. Whereas Colombia seeks to exculpate itself by claiming that the inhabitants in Ecuador's border region are not specifically targeted by the spraying of herbicide, Ecuador submits that Colombia is subject, at the very least, to the negative obligation to abstain from infringing the human rights of the individuals living in Ecuador. Colombia should have taken into account the inherent risks of aerial spraying of toxic chemicals, and should have refrained from such action along the border at least after the first official protests and requests for information expressed by Ecuador in July 2000[1341].

7.49 This position was also expressed by the UN Special Rapporteur on the Right to Health, Mr. Paul Hunt, when he stated that "Colombia has a human rights responsibility of international assistance and cooperation, including in

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territoriale externe d'un Etat, en dehors de cet espace commun". E. Decaux, "Le territoire des droits de l'homme", *Liber Amicorum Marc-André Eissen*, p. 69 (Bruxelles: Bruylant, 1995).

[1341] *See* EM, Chap. 3, para. 3.6 *et seq.*

health. Consequently, *as a minimum, Colombia must not jeopardise the enjoyment of the right to health in Ecuador*. It must 'do no harm' to its neighbour"[1342]. Therefore, Colombia is wrong when it criticizes Ecuador's claims regarding violations of the American Convention, ICCPR, ICESCR, and ILO Convention No. 169. Ecuador does not argue that Colombia has the territorial obligation to fulfil the rights enshrined in these human rights instruments, but Ecuador is of the firm view that, in a transboundary context, Colombia has the negative obligation to refrain from frustrating the human rights of populations living directly across the border in Ecuador.

7.50 As indicated in Chapter 6 of this *Reply*, these conclusions are also consistent with the wording of Article 14 of the 1988 Narcotics Convention, which provides that the "measures adopted shall respect fundamental human rights"[1343]. Although Colombia is certainly entitled to combat drug cartels and to eradicate illicit drug crops within its territory, such action can only be taken if it respects the fundamental human rights, not only of its own population, but also of those individuals affected by such measures in a transboundary context. Therefore, Colombia should have refrained from aerial spraying in the border region and should have adopted other measures indicated in Chapter 6 that would

[1342] U.N. Press Release, "U.N. Special Rapporteur on the Right to the Highest Attainable Standard of Health, Paul Hunt, Ends Visit to Ecuador" (18 May 2007) (emphasis added). EM, Vol. IV, Annex 185.

[1343] *See supra* Chap. 6, paras. 6.10-6.28

have respected the environment and the human rights of the people living in Ecuador.

7.51 Colombia's interpretation of the 1988 Narcotics Convention constitutes an abuse of right to the extent that Colombia believes that it can combat illicit drug crops without having regard to the human rights of individuals living in the border regions across from its own territory[1344]. It would be wrong to presume that the Contracting States to the 1988 Narcotics Convention intended to secure respect for human rights only within the territory of the State adopting coercive measures and not also in neighbouring States, if such measures have potentially extra-territorial effects. This is all the more so where such effects are so serious in their consequence.

7.52 Finally, it should be stressed that, by arguing that it has no obligations under international law to respect the human rights of individuals living across the border in Ecuador, Colombia renders the objective protection provided for in the American Convention illusory. The Convention simply cannot be read as permitting such violations to occur.

[1344] The possibility of abuse of right, although not to be presumed, has been acknowledged by the Court, and its predecessor, in various cases, including: *Case of the Free Zones of Upper Savoy and the District of Gex*, *Judgment, P.C.I.J. Series* A/B N° 46, p. 167 (1932); *Fisheries Case (United Kingdom v. Norway), I.C.J. Reports 1951*, p. 142.

Section IV. Breaches of the Rights of Indigenous Peoples

7.53 In its *Memorial*, Ecuador showed that the daily life of indigenous peoples living on its side of the border had been particularly affected by Colombia's aerial spraying. Displacement of communities, interference with the use and enjoyment of their property and traditional culture, and loss of access to and use of the forests, including traditional medicinal plants, has all resulted from Colombia's extensive spray programme[1345]. Ecuador claimed that Colombia's actions in these regards violated Article 27 of the ICCPR, Articles 4 to 7, 13 and 15 of ILO Convention 169, and Article 21 of the American Convention[1346]. In response, Colombia makes the same arguments that it made in relation to human rights violations. First, it denies that there is any evidence of harm resulting from aerial spraying activities taking place within Colombia[1347]. Second, it says that the aerial spraying is not targeted at indigenous peoples[1348]. Third, it says that responsibility is territorial, and that Ecuador not Colombia is responsible in international law for fulfilling obligations towards indigenous peoples in Ecuador[1349]. Finally, it asserts that Colombia has done nothing that could amount to a denial of the rights of indigenous peoples[1350]. Ecuador's response to these

[1345] EM, Chap. 6.

[1346] EM, Chap. 9, paras. 9.18-9.36.

[1347] CCM, Chap. 7, paras. 7.177-7.186.

[1348] CCM, Chap. 9, para. 9.155.

[1349] CCM, Chap. 9, paras. 9.159, 9.164-9.167, 9.169

[1350] CCM, Chap. 9, paras. 9.160, 9.165, 9.169.

arguments is the same as its response to Colombia's arguments on human rights. However, before addressing these issues it is necessary to reiterate the special status of indigenous peoples in international law and its relevance for the present dispute.

A. THE SPECIAL STATUS OF INDIGENOUS PEOPLES UNDER INTERNATIONAL LAW

7.54 The present dispute is of particular importance as it relates to violations of the internationally protected rights of indigenous people, and not strictly environmental harm and human rights violations in regard to the general population. At least four different ethnic groups living along the Ecuadorian border with Colombia have been seriously affected by the aerial sprayings: the Awá, the Cofán, the Kichwa, and the Afro-Ecuadorian communities of Esmeraldas. Colombia simply dismisses Ecuador's claims based on indigenous rights, believing that the subject merits only a short answer because of its allegedly controversial nature. Far from being controversial, however, Colombia has committed itself under international treaties and its own constitutional provisions and enacted laws to respect the rights of all indigenous peoples. In short, Colombia recognises through its own legal obligations that indigenous peoples benefit from special protection under both international and national law: both Ecuador and Colombia have committed themselves to promote the

enjoyment of rights by indigenous communities, notably those living alongside the common border.

7.55 The legal status of indigenous peoples has changed significantly over the past four decades. The need to secure the living conditions of such human groups has been widely acknowledged by the international community, through the development of binding legal norms. This has been the case at the domestic level of many States which afford special protection to indigenous groups – including Colombia and Ecuador – and at the international level through the adoption of international instruments recognizing the special rights of indigenous peoples. As acknowledged by Colombia, both States involved in the present dispute are parties to ILO Convention No. 169. This Convention provides for comprehensive protection measures of all indigenous peoples – wherever they are located – against interference by States. The Convention must be read in conjunction with other fundamental human rights instruments, such as the Universal Declaration of Human Rights, the ICESCR, the ICCPR, and other instruments on the prevention of discrimination. The importance of the provisions of ILO Convention No. 169 was reaffirmed in 2007 through the adoption of the UN Declaration on the Rights of Indigenous Peoples[1351].

[1351] United Nations, General Assembly, *Draft Resolution to the United Nations Declaration on the Rights of Indigenous Peoples*, U.N. Doc. A/61/L.67 (12 Sept. 2007).

7.56 The ILO Convention provides for the protection of the fundamental human rights of indigenous peoples and for the prohibition of discrimination. Article 3(1) clearly indicates that "[i]ndigenous and tribal peoples shall enjoy the full measure of human rights and fundamental freedoms without hindrance or discrimination". They benefit from the same level of international protection as do all other human beings. In addition, however, the specific needs of indigenous peoples have given rise to a recognition that special and additional measures of international protection are needed. Thus, States are called upon to promote "the full realisation of the social, economic and cultural rights of these peoples with respect to their social and cultural identity, their customs and traditions and their institutions"[1352]. Further, the Convention provides for special protection of indigenous peoples' property, cultures and environment[1353], their social, cultural, religious and spiritual values and practices[1354], and the special importance of the cultures and spiritual values of the peoples concerned in relationship with their lands and territories[1355] and their natural resources[1356].

7.57 Of utmost importance in this respect is the general obligation to consult in good faith, through adequate procedures, and without discrimination, the

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[1352] Article 2(2)(b).

[1353] Article 4(1).

[1354] Article 5(a).

[1355] Article 13.

[1356] Article 15.

indigenous peoples who are likely to be affected by measures concerning their immediate living environment. Article 6 of ILO Convention No. 169 is explicit in stating that governments *shall* "consult the peoples concerned, through *appropriate procedures* and in particular through their representative institutions, *whenever* consideration is being given to legislative *or administrative measures which may affect them directly*"[1357]. This provision is not subject to any territorial limitation. Equally, States adopting such measures are under the obligation to "*ensure* that, whenever appropriate, studies are carried out, in co-operation with the peoples concerned, to assess the social, spiritual, cultural and environmental impact on them of planned development activities"[1358] and such measures shall be taken in co-operation with the peoples concerned in order to "protect and preserve the environment of the territories they inhabit"[1359].

7.58 The fundamental importance of these obligations has been emphasized by the Inter-American Court of Human Rights, in various cases cited in the *Memorial*. Colombia has nothing to say about these cases. The Inter-American Court has interpreted Article 21 of the American Convention on Human Rights on the right to property in the light of the obligations contained in the ILO

[1357] Article 6(1) (emphasis added).

[1358] Article 7(3).

[1359] Article 7(4).

Convention No. 169[1360]. There is thus nothing controversial about the international protection of indigenous peoples. In fact, it is widely recognized that indigenous peoples live in very close inter-connectedness, indeed vital dependence, upon the ecosystem and the natural resources it contains[1361]. Disruptions caused by aerial spraying have had especially strong impacts upon the living conditions of affected communities, and therefore on the rights of indigenous peoples.

7.59 The witness statements of affected indigenous communities corroborate this. First, they focus more on the environmental impacts observed after the spraying, whereas accounts of non-indigenous witnesses concentrate more on the harms caused to their crops and livestock[1362]. The detailed accounts of

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[1360] *Matter of Pueblo Indígena de Sarayaku Regarding Ecuador, Provisional Measures*, IACHR, Series E No. 21, para. 32(d) (17 June 2005); *Case of the Mayagna (Sumo) Awas Tingni Community v. Nicaragua, Judgment*, IACHR, Series C No. 79, para. 83(d) (31 Aug. 2001); *Case of the Yakye Axa Indigenous Community v. Paraguay*, *Judgment*, IACHR, Series C No. 125 paras. 127 and 130 (17 June 2005); *Case of the Sawhoyamaxa Indigenous Community v. Paraguay, Judgment*, IACHR, Series C No. 146, paras. 117-119 (29 Mar. 2006); *Case of the Saramaka People v. Suriname, Preliminary Objections, Judgment*, IACHR, Series C No. 172, paras. 92-93 (28 Nov. 2007).

[1361] *See e.g.,* Norman E. Whitten, Jr., Ph.D., Dr. William T. Vickers, Ph.D. & Michael Cepek, Ph.D., *Tropical Forest Cultural Ecology and Social Adaptation in the Ecuadorian Border Region with Colombia* (hereinafter "Whitten et al. Report") (Jan. 2011), pp. 3, 17, 20, 31, 49, 53. ER, Vol. II, Annex 5.

[1362] *Compare* Witness 1 Declaration, *op. cit.* EM, Vol. IV, Annex 189; Witness 2 Declaration, *op. cit.* EM, Vol. IV, Annex 190; Witness 4 Declaration, *op. cit.* EM, Vol. IV, Annex 192; Witness 5 Declaration, *op. cit.* EM, Vol. IV, Annex 193; Witness 7 Declaration, *op. cit.* EM, Vol. IV, Annex 195; Witness 8 Declaration, *op. cit.* EM, Vol. IV, Annex 196; Witness 9 Declaration, *op. cit.* EM, Vol. IV, Annex 197; Witness 13 Declaration, *op. cit.* EM, Vol. IV, Annex 201; Witness 17 Declaration, *op. cit.* EM, Vol. IV, Annex 203; Witness 18 Declaration, *op. cit.* EM, Vol. IV, Annex 204; Witness 20 Declaration, *op. cit.* EM, Vol. IV, Annex 206; Witness 23 Declaration, *op. cit.* EM, Vol. IV, Annex 209; Declaration of Witness 26, 17 Feb. 2009. EM, Vol. IV, Annex 210; Declaration of Witness 27, 17 Feb. 2009. EM, Vol. IV, Annex 211; Witness 30 Declaration,

modifications in flora and fauna reflect the very close relationship of indigenous people with their land[1363]. Second, the Court will have noted that all witness statements of indigenous peoples refer to the medicinal plants they have traditionally relied on and how their use became ineffective, indeed dangerous, after the spray mixture had contaminated them[1364]. These two points naturally lead to the third observation, namely that the statements of the indigenous people show how severe the injuries they have had inflicted on them have been to their health[1365].

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op. cit. EM, Vol. IV, Annex 214; Witness 31 Declaration, *op. cit.* EM, Vol. IV, Annex 215; Witness 32 Declaration, *op. cit.* EM, Vol. IV, Annex 216; Witness 33 Declaration, *op. cit.* EM, Vol. IV, Annex 217; Witness 34 Declaration, *op. cit.* EM, Vol. IV, Annex 218; Declaration of Witness 36, 19 Feb. 2009, *op. cit.* EM, Vol. IV, Annex 219; Witness 37 Declaration, *op. cit.* EM, Vol. IV, Annex 220; Declaration of Witness 38, 19 Feb. 2009. EM, Vol. IV, Annex 221 *with* Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222; Declaration of Witness 40 (hereinafter "Witness 40 Declaration"), 20 Feb. 2009, *op. cit*. EM, Vol. IV, Annex 223; Declaration of Witness 41, 20 Feb. 2009 (hereinafter "Witness 41 Declaration"). EM, Vol. IV, Annex 224 Declaration of Colombia Witness 2, 20 Feb. 2009 (hereinafter "Colombia Witness 2 Declaration"), *op. cit*. EM, Vol. IV, Annex 226; Declaration of Colombia Witness 8, 4 Mar. 2009. EM, Vol. IV, Annex 231.

[1363] *See* Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222; Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223; Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224; Colombia Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 226; Declaration of Colombia Witness 8, 4 Mar. 2009. EM, Vol. IV, Annex 231. *See also* Whitten et al. Report, p. 3. ER, Vol. II, Annex 5.

[1364] *See, e.g.*, Witness 29 Declaration, *op. cit.* EM, Vol. IV, Annex 213; Witness 31 Declaration, *op. cit.* EM, Vol. IV, Annex 215; Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224; Colombia Witness 2 Declaration, *op. cit*. EM, Vol. IV, Annex 226; Declaration of Colombia Witness 10, 5 Mar. 2009. EM, Vol. IV, Annex 233. *See also* Whitten et al. Report, pp. 22-24, 30, 34, 52 (describing the use of medicinal plants by communities in the border region, and their particular vulnerability to contamination). ER, Vol. II, Annex 5.

[1365] *See* Witness 39 Declaration, *op. cit.* EM, Vol. IV, Annex 222; Witness 40 Declaration, *op. cit*. EM, Vol. IV, Annex 223; Witness 41 Declaration, *op. cit*. EM, Vol. IV, Annex 224.

B. THE EVIDENCE OF HARM

7.60 Colombia approaches Ecuador's arguments on violation of the rights of indigenous peoples in the same way that it responds to the human rights violations: it claims that evidence is supported by vague[1366] and unscientific[1367] witness statements, and that indigenous peoples live in very poor and unhealthy conditions anyway[1368]. Chapter 3 of this *Reply* addresses each of these arguments. The testimonies of indigenous witnesses are specific enough to match up with, and be corroborated by, the data obtained from the U.S. Department of State regarding the dates and locations of Colombia's spray flights[1369]. The indigenous testimonies are also corroborated by independent reports, based where appropriate on scientific data[1370]. The significance of the fragile living conditions of local indigenous communities impacted by Colombia's aerial spraying operations is also discussed in Chapter 3, and in the expert report of Dr. Whitten *et al*. These anthropology experts, who are intimately familiar with the communities of Ecuador's border region, explain that:

> "[O]ne unifying characteristic of the border communities is their heavy dependence upon the natural environment for food, shelter, medicine, spiritual practices and other critical aspects of their livelihoods. . . the people of the border region are inextricably

[1366] CCM, Chaps. 7 and 9, paras. 7.133, 7.134, 7.137, 7.177-7.180, 9.124.

[1367] CCM, Chap 7, paras. 7.181-7.182.

[1368] CCM, Chap. 7, paras. 7.183-7.185.

[1369] *See supra* Chap. 2, paras. 2.163, 2.167, 2.169, 2.175, 2.178, 2.180-2.182.

[1370] *See supra* Chap. 3, Sections I(B)(1) and I(D)(1).

> linked to their natural environment and are thus extremely vulnerable to environmental perturbations"[1371].

One particular source of vulnerability is the dependence of many indigenous communities on "swidden agriculture" or "shifting cultivation" systems, which rely upon a "delicate balance between the natural forest ecosystem and crops grown for human consumption"[1372]. Of course, when these systems are devastated by an herbicide that kills *all* plants, the people that rely on them for daily sustenance suffer terribly [1373].

7.61 Colombia claims that Ecuador "does not explain" how aerial spraying in Colombia could threaten the lifestyle of indigenous peoples in Ecuador[1374]. This is surprising considering that Ecuador devotes in Chapter 6 of its *Memorial* an entire section to harm to indigenous communities, which is complemented with another section in Chapter 9 on violation of the rights of indigenous peoples. In the *Memorial*, Ecuador provides detailed accounts from independent experts and witness statements as to the manner in which aerial spraying has damaged or destroyed the basis for peoples' livelihoods in several indigenous communities, killing crops and domestic animals, polluting water, causing health problems and

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[1371] Whitten et al. Report, *op. cit.*, p. 3. ER, Vol. II, Annex 5.

[1372] *Ibid.*, *op. cit.*, p. 3; *see also ibid.*, pp. 9-11, 21, 28, 36-36, 47.

[1373] *Ibid.*, *op. cit.*, pp. 9-11, 21, 28, 36-36, 47.

[1374] CCM, Chap. 9, para. 9.154.

psychological distress, and destroying medicinal plants and plants used for traditional rituals[1375].

7.62 As explained in the *Memorial*, the special connection of indigenous peoples with their environment is recognized by international treaties such as ILO Convention No. 169, and by decisions of the UN Human Rights Committee and most particularly of the Inter-American Court of Human Rights[1376]. The seminal decision in the *Awas Tingni Case*, the text of which was referred to in the *Memorial*[1377], merits restatement, since Colombia has not yet addressed it properly:

> "Indigenous groups, by the fact of their very existence, have the right to live freely in their own territory; the close ties of the indigenous people with the land must be recognized and understood as the fundamental basis of their cultures, their spiritual life, their integrity, and their economic survival. For indigenous communities, relations to the land are not merely a matter of possession and production but a material and spiritual element which they must fully enjoy, even to preserve their cultural legacy and transmit it to future generations"[1378].

[1375] EM, Chap. 6, paras. 6.106-6.130.

[1376] EM, Chap. 9, paras. 9.13-9.38.

[1377] EM, Chap. 9, para. 9.31.

[1378] *Case of the Mayagna (Sumo) Awas Tingni Community v. Nicaragua, Judgment*, IACHR, Series C No. 79, para. 149 (31 Aug. 2001).

The recent 2010 decision in the *Case of the Indigenous Community Xákmok Kásek* confirms this approach[1379].

7.63 In responding to the showing of breach of treaty provisions protecting the rights of indigenous peoples, Colombia simply ignores the evidence provided by Ecuador. It limits itself to generalities and vague assertions.

7.64 With regard to Article 27 of the ICCPR, when addressing the right of minorities to "enjoy their own culture", Colombia considers it "absurd" that aerial spraying can be the decisive cause of indigenous peoples abandoning their culture[1380]. On the contrary, however, the report by expert anthropologists submitted with this *Reply* explains how many of the indigenous groups affected by the aerial spraying programme have resided in the border region since pre-colonial times. In particular, the Cofán are the "earliest recorded inhabitants of the region" and all of their "currently titled lands are in their ancestral territory"[1381]. The Awá have lived in north-western Ecuador since the time of the Spanish conquest, when they moved to their current territory in the rugged and biodiverse rainforest region located in Ecuador's Esmeraldas and Carchi provinces[1382]. Moreover, the indigenous peoples of this region maintain a daily

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[1379] *Case of the Indigenous Community Xákmok Kásek v. Paraguay, Judgment*, IACHR, Series C No. 125, paras. 173-178 (24 August 2010).

[1380] CCM, Chap. 9, para. 9.161.

[1381] Whitten et al. Report, *op. cit.*, p. 18. ER, Vol. II, Annex 5.

[1382] *Ibid.*, *op. cit.*, p. 46.

connection to their traditional lands and environmental resources as a source of food, shelter, medicine, and as a basis for spiritual practices[1383]. As explained in the *Memorial*, the UN Human Rights Committee has recognized that disrupting the ties of indigenous peoples with their land and community can threaten their way of life and culture[1384]. As evidenced in statements of Awá, Cofán and Kichwa witnesses, the serious adverse effects of the aerial sprayings on their traditional, and often remote, communities, has weakened their balance[1385] and has led on occasions to their members abandoning their homes[1386].

7.65 On the violation of Article 21 of the American Convention on Human Rights (the right to property), it is mystifying that Colombia has chosen to ignore the significant body of jurisprudence developed by the Inter-American Court of Human Rights on the matter. Colombia appears to believe that Article 21 refers only to the need for indigenous peoples to have their lands recognized by the

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[1383] *Ibid.*, *op. cit.*, pp. 3, 17-39, 45-49, 53.

[1384] EM, Chap. 9, paras. 9.18-9.21.

[1385] *See* EM, Chap. 6, paras. 6.114-6.115; Declaration of Maria Blanca Chancosa Sanchez, 14 Jan. 2009. EM, Vol. IV, Annex 187; Witness 26 Declaration, *op. cit.* EM, Vol. IV, Annex 210; Witness 27 Declaration, *op. cit.* EM, Vol. IV, Annex 211; Witness 28 Declaration, *op. cit.* EM, Vol. IV, Annex 212; Witness 29 Declaration, *op. cit.* EM, Vol. IV, Annex 213; Witness 31 Declaration, *op. cit.* EM, Vol. IV, Annex 215; Witness 40 Declaration, *op. cit.* EM, Vol. IV, Annex 223; Witness 41 Declaration, *op. cit.* EM, Vol. IV, Annex 224.

[1386] Witness 11 Declaration, *op. cit.* EM, Vol. IV, Annex 199; Witness 26 Declaration, *op. cit.* EM, Vol. IV, Annex 210; Witness 27 Declaration, *op. cit.* EM, Vol. IV, Annex 211; Witness 28 Declaration, *op. cit.* EM, Vol. IV, Annex 212; Witness 29 Declaration, *op. cit.* EM, Vol. IV, Annex 213.

State[1387]. Instead, as underscored by the Inter-American Court of Human Rights in the *Awas Tingni Case*, the concept of property in indigenous communities has acquired a specific meaning, centred on the group and its close ties with the land[1388]. The Inter-American Court has pronounced itself in a similar fashion in a number of later cases, the most recent of which is the *Case of the Indigenous Community Xákmok Kásek*. In its decision of August 2010, the Inter-American Court stated that this community's cultural identity was affected through lacking its own land and natural resources. This resulted in a violation of the right to property[1389].

7.66 Colombia has an obligation not to frustrate the rights of indigenous peoples in Ecuador: the only issue in this case is evidentiary, whether it has failed to satisfy that obligation. Does aerial spraying of toxic herbicides along and near the border have a significant adverse impact on the rights of those affected in Ecuador? Ecuador's answer to that question is yes, for all the reasons set out in Chapter 3 and especially in the reports of UN Special Rapporteurs on the Right to Health, the Right to Food, and Rights of Indigenous Peoples, as summarised

[1387] CCM, Chap. 9, para. 9.169.

[1388] EM, Chap. 9, para. 9.31 (quoting *Case of the Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, *Judgment*, IACHR, Series C No. 79, para. 149 (31 Aug. 2001)).

[1389] *Case of the Indigenous Community Xákmok Kásek v. Paraguay, Judgment*, IACHR, Series C No. 125, paras. 173-178 (24 August 2010).

above[1390]. Insofar as this evidence shows that indigenous peoples within Ecuador are harmed by Colombia's aerial spraying, that amounts to a denial of their rights.

C. TARGETING OF INDIGENOUS PEOPLES

7.67 As with human rights law generally, it is not necessary that the activity that interferes with the rights of indigenous peoples should have been targeted specifically at the victims in order to constitute a violation of their rights. The case law dealing with interference with property, natural resources, and traditional way of life does not support Colombia's defence to Ecuador's claims. For example, in *Maya Indigenous Community of the Toledo District v. Belize,* the Inter-American Commission on Human Rights accepted that logging concessions threatened long-term and irreversible damage to the natural environment on which the petitioners' system of subsistence agriculture depended[1391]. Loss of topsoil would prevent forest regeneration, damaging water supplies and diminishing the availability of wildlife and plants[1392]. Citing the decision of the African Commission on Human and Peoples' Rights in *Social and Economic Rights Action Centre v. Nigeria*, the Inter-American Commission concluded that there had been violations of the petitioners' right to property in their ancestral

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[1390] *See supra* Chap. 7, paras. 7.5, 7.12, 7.49.

[1391] *Maya Indigenous Communities of the Toledo District v. Belize*, *Judgment,* Inter-Am.C.H.R., Report No. 40/04, Case 12.053, paras. 147-148 (12 Oct. 2004).

[1392] *Ibid.* at para. 31.

land[1393]. Its final order required Belize to repair the environmental damage, and to take measures to demarcate and protect their land in consultation with the community[1394]. At paragraph 150 it noted:

> "This Commission similarly acknowledges the importance of economic development for the prosperity of the populations of this Hemisphere. As proclaimed in the Inter-American Democratic Charter, '[t]he promotion and observance of economic, social, and cultural rights are inherently linked to integral development, equitable economic growth, and to the consolidation of democracy of the states of the Hemisphere.' At the same time, development activities must be accompanied by appropriate and effective measures to ensure that they do not proceed at the expense of the fundamental rights of persons who may be particularly and negatively affected, including indigenous communities and the environment upon which they depend for their physical, cultural and spiritual well-being"[1395].

The important point here is that the development activities to which the Commission refers were not "targeted" at the indigenous peoples whose rights were affected.

7.68 Similarly, in *Ilmari Lansman et al. v. Finland*, the UN Human Rights Committee held that

> "A State may understandably wish to encourage development or allow economic activity by enterprises. The scope of its freedom to do so is not to be assessed by reference to a margin of appreciation, but by reference to the obligations it has undertaken in article 27. Article 27 requires that a member of a minority shall

[1393] *Ibid.* at paras. 147-149.

[1394] *Ibid.* at para. 197.

[1395] *Ibid.*, para. 150.

> not be denied his right to enjoy his culture. Thus, measures whose impact amount to a denial of the right will not be compatible with the obligations under article 27. However, measures that have a certain limited impact on the way of life of persons belonging to a minority will not necessarily amount to a denial of the right under article 27"[1396].

The Committee concluded that Finland had taken adequate measures to minimise the impact on reindeer herding[1397]. Once again the activities were not specifically targeted at indigenous peoples, but the State nevertheless had an obligation to take adequate measures to minimise their impact. The point in the present case is that Colombia has not taken adequate measures – or indeed any proper measures – to prevent or minimise collateral damage to the rights of those affected in Ecuador, even though the spraying is not aimed or targeted at indigenous peoples *per se*.

D. TERRITORIALITY OF OBLIGATIONS TOWARDS INDIGENOUS PEOPLES

7.69 Ecuador's response on the territoriality of obligations with respect to the rights of indigenous peoples is the same as its response to Colombia's arguments on human rights in general. Ecuador does not argue that Colombia has to ensure the rights of persons within Ecuador. However, within the common legal space that both States occupy, Colombia has a negative obligation to refrain from frustrating the rights of indigenous populations living across the border in

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[1396] *Ilmari Lansman et al. v. Finland*, ICCPR Comm. No. 511/1992, para. 9.4 (1996).

[1397] *Ibid.*, para. 9.7 (1996). *Compare Lubicon Lake Band v. Canada*, ICCPR Comm. No. 167/1984, paras. 32.2-33 (1990) (finding that the impact of oil and gas extraction on the applicants' traditional subsistence economy constituted a violation of Article 27 of the ICCPR).

Ecuador. Article 7 of ILO Convention No. 169, Article 21 of the American Convention on Human Rights, Article 27 of the ICCPR, and Article 29 of the 2007 Universal Declaration on Human Rights are entirely consistent with Ecuador's position. Any other view would be inherently destructive of the holistic protection of indigenous peoples, such as the Awá in Ecuador and Colombia, whose territory and living space frequently straddle international borders, as they do in the present case[1398]. The particular cross-border vulnerability of indigenous peoples was understood by the drafters of ILO Convention No. 169; it requires States Parties to give special attention to their needs as social groups, not simply as individuals when they happen to reside within the territory of one or the other State. It is therefore not surprising that there is no provision in the ILO Convention comparable to Article 2(1) of the ICCPR. Assuming for the sake of argument that Colombia is correct in limiting the obligations of States under the ICCPR to "individuals within its territory and subject to its jurisdiction"[1399], there is plainly no textual, contextual or purposive basis for applying the same territorial limitation to ILO Convention No. 169. On the contrary, that Convention applies explicitly to "tribal peoples in independent countries" and "peoples in independent countries who are regarded as

[1398] *See* Whitten et al. Report, *op. cit.*, pp. 45-46. ER, Vol. II, Annex 5.

[1399] CCM, Chap. 9, paras. 9.16-9.36.

indigenous…"[1400]. There is no reference to territory or jurisdiction as the criteria for applying the Convention.

E. CONSULTATION AND NOTIFICATION

7.70 Under Article 6 of ILO Convention No. 169, any State planning to adopt measures that may detrimentally affect directly the living conditions or the health of indigenous peoples must consult with the peoples concerned through appropriate procedures. This applies to indigenous peoples living on both sides of the border. No such prior consultation or prior notification has ever taken place on the Ecuadorian side of the border. In fact, Colombia persistently repeats the mantra that it is entitled to forcefully eradicate illicit crops and that it can only successfully implement its programme under the cover of secrecy. Article 6(2) stipulates that "the consultations carried out in application of this Convention shall be undertaken, in good faith and in a form appropriate to the circumstances, with the objective of achieving agreement or consent to the proposed measures"[1401]. Leaving aside the question of the need for an agreement or consent by potentially affected indigenous communities, the wording of this provision leaves enough room for accommodating Colombia's security concerns

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[1400] Article 1(1).

[1401] *See also* Colombian Law 21 of 1991, approving ILO Convention No. 169; Claudia Rojas Quiñonez, Esq., *The Aerial Spray Program and Violations of Colombia's Domestic Laws Regarding the Environment and the Rights of Indigenous Peoples*, paras. 134-145 (Jan. 2011) (regarding the incorporation of ILO Convention No. 169, and its obligations, into Colombian domestic law) (hereinafter "Rojas Report"). ER, Vol. II, Annex 8.

with the necessity – even at very short notice – to alert local populations so that they can take necessary measures to avoid direct contact with the spray.

7.71 Further, Article 7(3) of the ILO Convention states in very clear terms that:

> "Governments shall ensure that, whenever appropriate, studies are carried out, in co-operation with the peoples concerned, to assess the social, spiritual, cultural and environmental impact on them of planned development activities. The results of these studies shall be considered as fundamental criteria for the implementation of these activities".

It is not necessary to dwell on the question whether the spraying operations qualify as "planned development activities" within the meaning of this provision. It is clear in Colombia's rhetoric that it seeks to achieve alternative development goals through its aerial spraying programme. Moreover, it is readily apparent from the plain meaning of Article 7(3) that it is concerned with securing appropriate follow-up and monitoring mechanisms to ensure that government activities or government-authorized activities in the territories of indigenous peoples do not detrimentally affect the social or spiritual environments of such communities.

7.72 It will not have escaped the attention of the Court that no such monitoring reports have been submitted to the Court by Colombia in its *Counter-Memorial*, or ever been made available to Ecuador, let alone studies carried out in

cooperation with affected indigenous communities. This is not only true in regard to the absence of monitoring reports on potential effects on Ecuadorian territory, it is equally true for the lack of reports pertaining to the Colombian side of the border. Not one report was presented by Colombia on monitoring activities along its own border in direct proximity to its spraying activities. It is obviously not enough to conduct impact studies or produce monitoring reports in regard to totally disconnected regions somewhere else in Colombia. It is equally insufficient to rely on random monitoring missions, because in order to be scientifically valid they need to be carried out directly or shortly after the sprayings take place. As such, Colombia is under a duty to assess the transboundary impacts of its planned activities and to conduct regular monitoring missions during the months where the sprayings occurred. It has failed to meet this obligation.

7.73 Thus, in addition to the human rights violations suffered by the indigenous people on the Ecuadorian side of the border, Colombia is in violation of its international law obligations under ILO Convention No. 169. It should have consulted and informed potentially affected indigenous communities – in the present case including the representatives of the Awá, Cofán, Kichwa and Afro-Ecuadorian communities – and conducted meaningful monitoring missions in order to ensure that its actions did not go beyond what Colombia assumed to be

the best-case scenario. These actions – or inactions – violate ILO Convention No. 169.

7.74 The right of effective participation of indigenous communities in the decision-making process when governmental measures are likely to affect them has been expressly recognized by the Constitutional Court of Colombia on various occasions[1402]. The Court ruled in particular that the mechanism of prior consultation of indigenous peoples is an integral part of the fundamental right to participate in the decision-making process[1403]. This finding has been repeatedly affirmed by Colombia's Constitutional Court[1404]. Of particular importance for

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[1402] Republic of Colombia, Constitutional Court, *Triviño et al.*, Judgment SU-039/97, p. 1 (3 Feb. 1997) The Court held the following: "[I]t is provided for, when the exploitation of natural resources in indigenous territories is attempted, the communities' participation in the ultimately adopted decisions to authorize said exploitation. In this manner, the communities' fundamental right to preserve their referenced integrity is guaranteed and made effective through exercise of another right that also possesses a fundamental nature, in terms of Article 40, paragraph 2 of the Constitution, which is the right to the communities' participation in the referenced decisions". ER, Vol. V, Annex 128. *See also* Rojas Report, *op. cit.*, paras. 134-145 (discussing indigenous law in Colombia). ER, Vol. II, Annex 8.

[1403] Republic of Colombia, Constitutional Court, *Triviño et al.*, Judgment SU-039/97, p. 1 (3 Feb. 1997) ("… the participation of the indigenous communities in decision that may affect them relating to the exploitation of natural resources, is noteworthy in that the mentioned participation through the mechanism of consultation acquires the connotation of a fundamental right, since a basic instrument is created to preserve the ethnic, social, economic and cultural integrity of the indigenous communities and thus, to guarantee their continuing existence as a social group".) ER, Vol. V, Annex 128. *See also* Rojas Report, *op. cit.*, para. 147. ER, Vol. II, Annex 8.

[1404] *See, e.g.*, Constitutional Court of Colombia, Judgment T-428 (1992); Constitutional Court of Colombia, Judgment T-405 (1993); Constitutional Court of Colombia, Judgment T-007 (1995). For subsequent instances, see: Constitutional Court of Colombia, Judgment C-169 (2001). *See also* Republic of Colombia, Constitutional Court, *Urueta Rojas.*, Judgment C-418/02 (28 May 2002) ("For purposes of the resolution of the present process, it is relevant to highlight that participation in itself reaches the level of a fundamental right which the State must assure and facilitate for "all", as an essential State aim, in the context of decisions that affect them and their economic, political, administrative and cultural life. At the same time, participation is established as an indispensable and irreplaceable tool for the effectiveness other recognized constitutional

present purposes is the petition filed by the Organisation of Indigenous Peoples of the Colombian Amazon ("OPIAC") seeking by way of temporary injunction the protection of the right to life, identity, and cultural integrity, to free development of personality and due process affected by the aerial spraying program[1405]. The Organisation protested against the fact that Colombia was carrying out its aerial spraying programme without having consulted or notified the affected indigenous communities. In this case, the Constitutional Court related in detail the evolution in international law of the protection of indigenous peoples, the manner in which indigenous rights have been incorporated into the Colombian legal order, and the development of the Court's jurisprudence in this respect.

7.75 With respect to the obligation of prior consultation and its relation to the ILO Convention, the Colombian Constitutional Court ruled as follows:

> "It is of particular importance in the present case to refer to ILO Convention No. 169, specifically, the right of indigenous and tribal peoples to participate in prior consultation in accordance with the Constitution and constitutionality block and pursuant to the dispositions in articles 93 and 94 of the constitutional system, not only because the instrument containing the provision is from the

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rights, whether or not they possess a fundamental nature. … The indigenous communities' right to participation as a fundamental right is supported by Convention number 169, approved by Law 21 of 1991. This Convention is aimed at ensuring the rights of indigenous peoples to their respective territories and the protection of their cultural, social and economic values, as a means to assure their survival as human groups".). ER, Vol. V, Annex 142. *See also*, Rojas Report, *op. cit.,* para. 147. ER, Vol. II, Annex 8.

[1405] Constitutional Court of Colombia, Judgment SU-383/03 (13 May 2003) (summarized in ILO, *Application of Convention No. 169 by Domestic and International Courts in Latin America: A Casebook,* pp. 87-97 (Geneva: ILO, 2009)). *See also* Rojas Report, paras. 130, 137, 150-155. ER, Vol. II, Annex 8.

> International Labour Organization and sets out the labour rights of these peoples in article 53 of the Constitution but also i) because the participation of the indigenous communities in decisions taken in respect of the natural resources in their territories is set out in article 330 of the Constitution, and this cannot be understood as the negation of the right of these peoples to be consulted in other aspects inherent to their subsistence as a recognisable community pursuant to article 94 of the Constitution, ii) because said Convention is the most recognized instrument against the discrimination that is suffered by indigenous and tribal peoples, iii) because the right of indigenous peoples to be consulted prior to administrative and legislative decisions that directly affect them is a measure of affirmative action that the international community has adopted and recommended to combat the origins, causes, forms and modern manifestation of racism, racial discrimination, xenophobia, and the related forms of intolerance that affect the indigenous and tribal peoples"[1406].

And the Constitutional Court went on to state:

> "Thus, in line with ILO Convention No. 169, the consultations ordered cannot be understood as a mere formality, given that carrying them out in good faith means that the indigenous and tribal peoples of the Colombian Amazon be informed about the content of the Programme that is taking place in their territories in order to obtain their consent on the impact of the measures on their habitat and on their cognitive and spiritual framework"[1407].

7.76 It is thus clear that Colombia has not only failed to inform or consult the Government of Ecuador or the populations living on the Ecuadorian side of the

[1406] *Ibid*. Translation taken from ILO, *Application of Convention No. 169 by Domestic and International Courts in Latin America: A Casebook,* p. 94 (Geneva: ILO, 2009) (internal citation omitted). *See also* Rojas Report, *op. cit*., paras. 150-155 (discussing this ruling). ER, Vol. II, Annex 8.

[1407] *Ibid*. at p. 96. *See also ibid*., paras. 150-155 (discussing this ruling). ER, Vol. II, Annex 8.

border, but has manifestly also failed to apply ILO Convention No. 169 to its own indigenous population[1408].

7.77 Finally, with regard to transboundary cooperation, it is plain that Colombia has also violated obligations deriving from a bilateral agreement of November 2002 relating to transboundary cooperation in the so-called *Zonas de Integración Fronteriza* (Border Integration Zones)[1409]. In pursuance of a Decision of the Andean Council of Foreign Ministers of June 2001 calling for the establishment of border zones in which neighbouring States would cooperate with a view to promote sustainable development[1410], Colombia proposed to Ecuador, by way of a diplomatic note, that certain border zones be designated by both States[1411]. Ecuador replied positively and thus, by an exchange of notes completed in November 2002, the provinces of Putumayo and Nariño in Colombia as well as the provinces of Sucumbíos, Carchi and Esmeraldas in Ecuador were designated as *Zonas de Integración Fronteriza*[1412]. As will be outlined further below, Colombia also acted in pursuance of its national

[1408] *See* Rojas Report, *op. cit.,* paras. 146-160, 169-173 (describing the Colombian government's non-compliance with internal regulations regarding indigenous rights). ER, Vol. II, Annex 8.

[1409] Andean Community, Border Integration Zone Colombia-Ecuador, Diplomatic Notes DM/DDF 44552 & 54679/02 GM/DGAF, Official Gazette of Agreements of Cartagena, No. 888 (21 Jan. 2003). ER, Vol. IV, Annex 101.

[1410] Andean Community, Decision 501 Border Integration Zone in the Andean Community, Official Gazette of Agreements of Cartagena, No. 680 (28 June 2001). ER, Vol. IV, Annex 100.

[1411] Andean Community, Border Integration Zone Colombia-Ecuador, Diplomatic Notes DM/DDF 44552 & 54679/02 GM/DGAF, Official Gazette of Agreements of Cartagena, No. 888 (21 Jan. 2003). ER, Vol. IV, Annex 101.

[1412] *Ibid.*

legislation for the development of border regions, Law 191 of 1995, which includes as a main objective the respect for human rights and the protection of indigenous peoples living in these regions[1413]. Colombia and Ecuador thus agreed, as proposed by the above-mentioned Decision of the Andean Council of Foreign Ministers, to cooperate in these border regions.

7.78 Set in this context, it is also significant that Colombia's domestic law – including under its own Constitution[1414] – accord special recognition for the needs of indigenous peoples, a point on which Colombia's *Counter-Memorial* is tellingly silent. In 1991, Colombia enacted the current Constitution, further strengthening the protection of indigenous rights[1415]. Since then, various laws have granted specific protection to the rights of indigenous peoples[1416]. Significantly, Law 21 of 1991 approved ILO Convention No. 169 and incorporated it into the national legal order[1417]. The Colombian Constitutional Court has since confirmed that the ILO Convention establishes a principal legal

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[1413] Republic of Colombia, National Congress, *Law 191 of 1995* (23 June 1995). ER, Vol. V, Annex 125.

[1414] *See* Political Constitution of Colombia, Arts. 7, 68(5), 70(2), 246 and 330 (1991). *See also*, Rojas Report, *op. cit*., paras. 134-145. ER, Vol. II, Annex 8.

[1415] *See* Rojas Report, *op. cit*., paras. 134-145. ER, Vol. II, Annex 8.

[1416] *See ibid.*

[1417] Colombian Law 21 of 1991, approving ILO Convention No. 169. *See* Rojas Report, *op. cit.*, paras. 134-145. ER, Vol. II, Annex 8.

source for the domestic legislation relating to indigenous rights[1418]. These laws recognise greater autonomy for indigenous communities as regards the territorial and political management of their lands and natural resources, and establish better participatory rights in decision-making processes that are likely to affect their interests and rights. It appears that these domestic norms were not complied with in authorising the aerial spraying programme[1419]. Relatedly, Colombia has committed itself to providing particular attention and assistance to indigenous peoples living in the border regions with Ecuador. In 1995, Colombia adopted Law 191 of 1995, relating to its border regions: this sought, *inter alia,* to promote the protection and development of indigenous peoples, and recognised a right of contact with indigenous peoples living across the border in other neighbouring countries[1420]. If nothing else, this law recognises and reflects the transboundary nature of the obligations imposed upon Colombia by ILO Convention No. 169, as

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[1418] Republic of Colombia, Constitutional Court, *Molina*, Judgment C-401/05, paras. 17-22 (14 Apr. 2005) (holding, in conformity with Article 53(4) of the 1991 Constitution, "*as a general matter, all these [labour] conventions acquire the nature of legal, binding standards in internal law due to the simple fact of their respective ratification, without the necessity of promulgating new laws to incorporate its specific content into the country's legal framework or its development.*" and that international human rights treaties that have been ratified by Colombia are a principal source forming part of the so-called "*constitutionality block" ("bloque de constitucionalidad*".). ER, Vol. V, Annex 153. *See also* Rojas Report, *op. cit*., paras. 143-144. ER, Vol. II, Annex 8.

[1419] *See* Rojas Report, *op. cit.*, paras. 146-160, 169-173 (describing the Colombian government's non-compliance with internal regulations regarding indigenous rights). ER, Vol. II, Annex 8.

[1420] Republic of Colombia, National Congress, *Law 191 of 1995*, Arts. 3 and 5 (23 June 1995). ER, Vol. V, Annex 125.

well as the particular geographical, environmental, cultural and socioeconomic characteristics of the area[1421], and contradicts Colombia's territorial arguments.

7.79 It is submitted that, by implementing the programme of spraying toxic pesticides affecting both the Ecuadorian and Colombian border provinces, Colombia has violated its obligations created by the exchange of notes to cooperate with Ecuador in the positive development of these border zones. Such violation is further confirmed by Colombia's domestic laws establishing special protection for indigenous peoples.

Section V. Relationship Between the Protection of the Environment and the Protection of Human and Indigenous Rights

7.80 Colombia's argument that the interrelationship between environmental law and human rights law has to be construed in the light of the principle of specialty as applied by the ICJ in the *Nuclear Weapons Case* is legally unfounded. According to Colombia, "[a] new set of norms and balances concerning transboundary harm is not to be 'deduced from the terms of the Covenant itself", when international law already lays down the relevant

[1421] Republic of Colombia, National Congress, *Law 191 of 1995*, Art. 4(c) (23 June 1995) (defining Border Integration Zones as: "Those areas belonging to Border Departments, that possess geographic, environmental, cultural and/or socioeconomic characteristics that *advise joint action and planning by border authorities in joint agreement with neighbouring countries*, to take actions that are suitable for promoting development and strengthening bilateral and international exchange".) (emphasis added). ER, Vol. V, Annex 125.

standard"[1422]. Thus, again according to Colombia, the *content* of human rights norms in connection with environmental degradation cannot be determined *independently* of the special rules of environmental law, or those relating to the protection of indigenous peoples[1423]. The extent to which Colombia's purported *lex specialis* rule relating to the right to life in cases of armed conflicts under international humanitarian law can also be applied in times of peace, and relating to the particular subject of environmental harm, is not apparent to Ecuador.

7.81 In fact, the present case is not concerned with the application of human rights under two different legal regimes, *i.e.*, in times of peace as opposed to times of armed conflict, but with the complementary application of different types of legal rules and institutions. International human rights instruments *and* international environmental law *and* the rules protecting indigenous peoples take into account the harmful impact of pollution on humans, and focus on the failure of the State to take necessary preventive measures. As Ecuador has already explained in the previous section of this Chapter, human rights and the law on transboundary harm, for example, are not mutually exclusive, but rest on the same foundations and must be applied in a mutually supportive way. Each of these norms, together with those arising in respect of the protection of the rights of indigenous peoples, is distinct and gives rise to an independent cause of action.

[1422] CCM, Chap. 9, para. 9.7.

[1423] *Ibid.*

7.82 Moreover, as the Court has noted: "the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn"[1424]. The interrelation between human rights and environmental harm, and between the obligations to protect indigenous peoples and human rights and environmental norms, has been reaffirmed on several occasions by the Inter-American Court of Human Rights, most recently in the *Kawas-Fernández Case*, where the Inter-American Court stated that:

> "in accordance with the case law of this Court and the European Court of Human Rights, there is an *undeniable link* between the protection of the environment and the enjoyment of other human rights. The ways in which the environmental degradation and the adverse effects of the climate change have impaired the effective enjoyment of human rights in the continent has been the subject of discussion by the General Assembly of the Organization of American States and the United Nations. It should also be noted that a considerable number of States Parties to the American Convention have adopted constitutional provisions which expressly recognize the rights to a healthy environment. These advances towards the development of human rights in the continent have been incorporated into the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights 'Protocol of San Salvador'"[1425].

[1424] *Legality of the Threat or Use of Nuclear Weapons*, *I.C.J. Reports 1996*, pp. 241, para. 29.

[1425] *Case of Kawas-Fernández v. Honduras, Judgment*, IACHR, Series C No. 152, para. 148 (3 Apr. 2009) (emphasis added, internal citations omitted). *See also Matter of Pueblo Indígena de Sarayaku Regarding Ecuador, Provisional Measures*, IACHR, Series E No. 21 (17 June 2005); *Case of the Mayagna (Sumo) Awas Tingni Community v. Nicaragua, Judgment*, IACHR Series C No. 79 (31 Aug. 2001); *Case of the Yakye Axa Indigenous Community v. Paraguay*, *Judgment*, IACHR, Series C No. 125, paras. 131 and 137 (17 June 2005); *Case of the Sawhoyamaxa Indigenous Community, Judgment*, IACHR, Series C No. 146, paras. 118-121 and 131 (29 Mar. 2006); *Case of the Saramaka People v. Suriname, Preliminary Objections, Judgment*, IACHR, Series C No. 172, paras. 121, 122, 126, 128 (28 Nov. 2007).

7.83 Ecuador submits that the law concerning transboundary harm must be interpreted and applied in the light of relevant human rights standards relating to life, health, private life and property, among others, rather than mediated through an alleged *lex specialis* rule. Ecuador submits that human rights obligations may be particularly relevant in the context of transboundary harm: it is precisely in such situations of conflicting sovereignties where the risk of human rights violations in another jurisdiction is most likely. The same failings that lead to Colombia's failure to prevent transboundary harm in Ecuador have in this case also led to a failure to respect human rights in Ecuador.

7.84 For all these reasons, Ecuador invites the Court to reject arguments advanced by Colombia that seek to keep human rights and environmental protection and the rights of indigenous peoples as distinct and separate fields which need to be accommodated through an alleged *lex specialis* rule. Far from presenting a normative conflict, these fields of law can and should be interpreted and applied in a consistent and mutually supportive way.

Conclusions

7.85 In sum, Colombia's attempt in the *Counter-Memorial* to challenge the overwhelming case for human rights violations that Ecuador presented in the *Memorial* fails for the following reasons:

(1) The evidence adduced by Ecuador shows that drift from Colombia's aerial spraying of toxic herbicides has caused significant harm to people and their property, as well as to their environment, in Ecuador. The failure to prevent these harms is more than sufficient to constitute a violation of the right to life, health, private life, food and water, property, humane treatment, a healthy environment, and information, in contravention, *inter alia*, of the 1969 American Convention on Human Rights with the 1988 Additional Protocol; the 1966 ICCPR and ICESCR; the 1979 CEDAW; and the 1989 CRC.

(2) It is not necessary for Ecuador to show that Colombia's aerial spraying is "targeted" at anyone in Ecuador. The human rights case law concerned with pollution impacts on health and private life shows that pollution normally involves unintended and incidental consequences, but these impacts are no less violations of human rights.

(3) Harm could have been prevented if Colombia had exercised the necessary diligence in controlling the spraying operations and enforcing its own environmental standards. The human rights case law demonstrates that States must balance the interests of the community in eradicating illicit crops against the harm to individual human rights. By failing to comply with or enforce its own EMP, Colombia has carried out spraying operations in disregard of the harmful impact on humans.

(4) Human rights, the law on transboundary harm and the protection of the rights of indigenous peoples are not mutually exclusive, but rest on the same foundations and must be applied in a consistent and mutually supportive way. The law concerning transboundary harm must be interpreted and applied in the light of relevant human rights standards relating to life, health, private life, food and water, property, humane treatment, a healthy environment and information, rather than mediated through an alleged *lex specialis* rule.

(5) Colombia and Ecuador are part of a common legal space at the regional level (*un espace juridique commun*) relating to the protection of human rights and indigenous peoples. It follows that Colombia and Ecuador are subject to an international public order of human rights which does not allow for loopholes in the effective protection of human rights for any part of their population.

(6) The circumstances surrounding the present case fall within the terms of Article 1 of the American Convention on Human Rights and Article 2(1) of the ICCPR. To exclude from the protection offered by these instruments acts committed in one Contracting State but which produce effects in the territory of another Contracting State would run counter to the object and purpose of these instruments.

(7) The daily life of indigenous peoples living on the Ecuadorian side of the border has been particularly affected by Colombia's aerial spraying. Displacement of communities, interference with the use and enjoyment of their

property and traditional culture, and loss of access to and use of the forests, including traditional medicines, have all resulted from Colombia's extensive spray programme, in violation Article 27 of the ICCPR, Articles 4-7, 13 and 15 of ILO Convention No. 169, and Article 21 of the American Convention.

(8) Colombia is in violation of its obligation under ILO Convention No. 169 to respect the rights of indigenous peoples, and to consult and notify indigenous communities likely to be affected by aerial spraying of herbicides – in the present case, including the representatives of the Awá, Cofán, Kichwa and Afro-Ecuadorian communities. It is also in violation of its obligation to conduct meaningful monitoring of the impacts on these communities.

(9) Finally, Colombia has violated obligations deriving from a bilateral agreement of November 2002 relating to transboundary cooperation in the so-called *Zonas de Integración Fronteriza* (Border Integration Zones).

CHAPTER 8.

REMEDIES

8.1 In Chapter 10 of the *Memorial*, Ecuador set out the consequences of the responsibility and liability of Colombia for the multiple violations of international law that have been occasioned by its acts and omissions in relation to the aerial spraying programme commenced in 2000. Basing itself upon the ILC Draft Articles on State Responsibility, and on the practise adopted by the International Court of Justice, in its *Memorial*, Ecuador set out the principles underlying the relief sought in its submissions, calling for (1) a declaration that Colombia has violated its international obligations[1426], (2) an order of cessation and non-repetition of Colombia's internationally unlawful acts[1427], (3) the application of the principles governing reparation[1428], (4) the application of the principles governing compensation[1429], and (5) the principle of satisfaction[1430].

8.2 Colombia has chosen to respond only briefly to these arguments and submissions, in Chapter 10 of its *Counter-Memorial*[1431]. Colombia indicates in the most general terms that Ecuador's arguments are inadequate, and for this reason it will only address "all issues of legal consequences, including

[1426] Memorial of Ecuador, Vol. I, Chap. 10, para. 10.2 (28 Apr. 2009) (hereinafter "EM").

[1427] EM, Chap. 10, paras. 10.10-10.13.

[1428] EM, Chap. 10, paras. 10.14-10.25.

[1429] EM, Chap. 10, paras. 10.26-10.58.

[1430] EM, Chap. 10, paras. 10.59-10.60.

[1431] Counter-Memorial of Colombia, Vol. I, Chap. 10, paras. 10.1-10.6 (29 Mar. 2010) (hereinafter "CCM").

quantification" at a later stage in light of the Court's "actual findings of fact"[1432]. Apart from this, Colombia sets out its reasons why it believes the Court should not accede to Ecuador's request that the Court should order Colombia to refrain from further aerial spraying operations "at, near or across the border with Ecuador"[1433]. Ecuador will respond to each argument in turn.

8.3 As a preliminary matter, Ecuador notes that, as recently as 11 November 2010, Colombia reaffirmed that it would continue to maintain a buffer zone of 10 kilometres along the border with Ecuador, within which it would not engage in aerial spraying activity[1434]. This representation has now been made on numerous occasions, and it is one on which Ecuador relies, not least as it reflects a confirmation on the part of Colombia as to the reasonableness and proportionality of the relief sought by Ecuador. However, Colombia's representation is insufficient in itself because it is neither a permanent nor a binding commitment to refrain from conducting aerial spraying operations in close proximity to the border. To obtain such a permanent and binding commitment – in light of Colombia's refusal to give one – Ecuador requires the intervention of the Court.

[1432] CCM, Chap. 10, para. 10.7.

[1433] CCM, Chap. 10, paras. 10.8-10.11.

[1434] Republic of Colombia, Ministry of Foreign Affairs, Press Release (11 Nov. 2010). ER, Vol. V, Annex 156.

Section I. The Purported Impropriety of Ecuador's Approach to Relief

8.4 Colombia seeks to circumvent Ecuador's claimed relief on the grounds that Ecuador has not proven any material damage and is therefore not entitled to any remedy at all[1435]. This is a classic bootstraps argument, and it suffers from a number of basic and self-evident flaws. First, it proceeds on the erroneous basis that Ecuador has not established any violation of any international legal obligations, whether in respect of sovereignty, the prevention of harm to human health and the environment, the violation of human rights and indigenous peoples' rights, or the violation of essential procedural requirements such as the provision of information and the conduct of a prior environmental impact assessment. If Colombia is wrong on that basic assumption – as Ecuador asserts is self-evidently the case – then it follows inexorably that Ecuador is entitled to a declaration of Colombia's responsibility under international law and, in due course, an assessment of liability. This is well-established and follows from the ILC Articles, an instrument to which Chapter 10 of the Colombian *Counter-Memorial* makes not a single reference. It is particularly appropriate in relation to the procedural violations, which by definition cannot await a showing of actual harm in order to have become applicable and to have been violated: it is sufficient that such a declaration is an appropriate remedy in the face of the real risks that exist, and that are largely recognised by Colombia.

[1435] CCM, Chap. 10, para. 10.4.

8.5 Colombia's approach is to rewrite the basic rules of international law, by ignoring established principles and the constant practise of the Court. As Colombia well knows, it is usual and proper for the Court to be asked first to identify a violation of an international legal obligation, and only then to determine the consequences of that violation. This is exactly the approach sought by Ecuador in its *Application*, in its *Memorial* and in its Submissions.

8.6 The second error into which Colombia falls is its patent inability to distinguish between the identification of a violation, on the one hand, and the quantification of loss, on the other hand. Colombia's approach to Ecuador's request for relief is entirely premised on the alleged inability of Ecuador to quantify in physical and monetary terms the totality of the harms that have occurred. It is certainly true that Ecuador has not yet quantified the monetary value of the harms it has suffered, but adopting the approach taken by the Court in other cases it respectfully submits it has no need to do so *at this stage of the proceedings*. In its *Memorial*, Ecuador has amply demonstrated that violations of international legal norms have occurred and that these have had real and serious consequences: the sovereignty of Ecuador has been violated; damage has been caused to humans and to their property, including farms; and damage has been caused to the natural environment in Ecuador[1436]. These matters have been

[1436] EM, Chaps. 5 and 7.

addressed in detail in this *Reply*[1437]. In regard to quantification of the damages incurred, Ecuador has taken the position that this is to be addressed at a later stage in the proceedings[1438].

8.7 In adopting this approach Ecuador is following the tried and tested practise of the Court, as reflected by way of example in the *Nicaragua* case and the *Case of Armed Activities in the Democratic Republic of Congo*, both of which were invoked in the *Memorial* but to which Colombia has offered no response[1439]. In neither of those cases was the Applicant State required to quantify in the first phase of the proceedings the consequences of the violations or the precise monetary valuation of the harms suffered.

8.8 Third, and most significantly, Colombia asserts that Ecuador has failed to prove the "material element" of what Colombia refers to as the "principal claim"[1440]. This is simply wrong, as the evidence before the Court shows. Ecuador has proved violations of international legal obligations and it has also proved that harmful consequences have been felt as a direct result of these violations, and for which Colombia's liability under international law is

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[1437] *See supra* Chaps. 3 and 5.

[1438] EM, Chap. 10, para. 10.49.

[1439] EM, Chap. 10, paras. 10.3-10.5.

[1440] CCM, Chap. 10, para. 10.2.

established[1441]. The extent of that harm and the quantification of its monetary value where such compensation is due are properly matters for a later phase of the proceedings.

8.9 In short, this is not about imposing on the Court any requirement to "intuit" harm, as Colombia claims, or about any form of "confession" that Ecuador is supposed to have made as to the adequacy or extent of its case[1442]. In no recent case of which Ecuador is aware has the evaluation of the harm suffered – in monetary terms – been quantified at this stage of the proceedings. Colombia has fallen into confusion, or is wilfully mischaracterising Ecuador's pleaded case, or has simply run out of steam at the tail end of a lengthy and ambiguous pleading that frequently fails to engage with the arguments made by Ecuador.

8.10 With regard to Ecuador's claim for an order for non-repetition, Colombia asserts that no such order should be made "in the absence of proof of any wrongful act on the part of Colombia", the only wrongful act being "proof of damage"[1443]. Here again, Colombia melds the assessment of the violation of Ecuador's substantive international legal rights with the valuation of the harms suffered, yet they are not one and the same thing. The object of the order for non-

[1441] EM, Chaps. 5 and 7; *see supra* Chaps. 3 and 5-7.

[1442] CCM, Chap. 10, para. 10.2

[1443] CCM, Chap. 10, para. 10.4.

repetition is to protect Ecuador from any further violation of its rights under international law: those rights include, but are not limited to, the prevention of further physical harm that is capable of being quantified in monetary terms. Ecuador is also entitled to relief in relation to violations of sovereignty, the protection of the aesthetic value of its natural environment, and the protection of its people from the fears caused by the aerial spraying of toxic pesticides. Whether or not these are susceptible to monetary valuation – and Ecuador submits that they are – Colombia is not entitled to act in violation of international norms that guarantee these rights and the values they reflect.

8.11 Finally, Colombia challenges Ecuador's reliance on certain authorities governing the identification of principles for the protection and valuation of environmental and related harms. Colombia invites the Court to follow the approach set forth in the single authority of the *Trail Smelter* case, which dates back to the 1940s, and take no account of the more recent approach reflected in the decisions of the UN Compensation Commission ("UNCC")[1444]. In this way, Colombia wishes to inscribe itself in methodologies adopted more than six decades ago, in the period before the advent of the modern rules of international law pertaining to the rights of indigenous peoples, human rights and the environment, and to ignore the totality of legal developments that have occurred since then. This is telling, and also flatly inconsistent with the approach reflected

[1444] CCM, Chap. 10, para. 10.6.

in the domestic law of Colombia[1445]. Colombia invites the Court to ignore, amongst other approaches, that taken by the UNCC. Yet this is a pertinent authority because it brings together the developments in international law and practise over the past six decades. It reflects the approach taken by Ecuador in these proceedings.

8.12 Colombia informs the Court that it will address "all issues of legal consequences" of its unlawful acts at a later stage[1446]. This wholly inadequate response wilfully mischaracterises the issues to be decided by the Court at the present stage. Ecuador invites the Court to reject Colombia's approach, and to determine that Colombia has violated its international legal obligations, of both a procedural and substantive character. The monetary consequences are properly to be determined at a later stage, in accord with established international practise. In this regard, Ecuador notes that in the recent Judgment in the *Case Concerning Ahmadou Sadio Diallo* the Court adopted precisely the approach for which Ecuador has argued: having found a violation of international law, the Court ruled: (i) that reparation due "must take the form of compensation"; (ii) that the parties should "engage in negotiation in order to agree on the amount of compensation to be paid"; and (iii) failing agreement between the Parties within

[1445] *See* Claudia Rojas Quiñonez, Esq., *The Aerial Spray Program and Violations of Colombia's Domestic Laws Regarding the Environment and the Rights of Indigenous Peoples*, Sections I & V(B) (Jan. 2011). ER, Vol. II, Annex 8.

[1446] CCM, Chap. 10, para. 10.7.

six months of the Judgment on the amount of compensation to be paid, the matter "shall be settled by the Court in a subsequent phase of the proceedings" and that "a single exchange of written pleadings by the Parties would then be sufficient in order for it to decide on the amount of compensation"[1447].

Section II. Ecuador Has Not Attempted to Restrict Colombia's Sovereignty Over Its Territory

8.13 Having asserted that it will not engage in any assessment of the legal consequences of its unlawful acts, Colombia proceeds in the second part of its response to Ecuador's remedial arguments to do precisely that. Colombia takes exception to Ecuador's request that it should not conduct aerial spraying "at, near or across the border with Ecuador"[1448]. The reasons it provides are wholly unpersuasive.

8.14 Colombia reminds the Court that it has maintained a 10 kilometre "no spray" zone along the Colombian side of the border[1449]. However, it is important to note that this has been done by Colombia on a voluntary basis and without prejudice to its capacity to resume such spraying "as might be necessary"[1450].

[1447] *Case Concerning Ahmadou Sadio Diallo (Republic of Guinea v Democratic Republic of Congo), Judgment, 2010*, pp. 48-49, paras. 161-164.

[1448] CCM, Chap. 10, para. 10.10.

[1449] CCM, Chap. 10, para. 10.9.

[1450] *Ibid.*

Such an approach provides inadequate guarantees that Ecuador's rights under international law will be protected.

8.15 Colombia asserts that it "does not claim any right to spray across the border", that the spraying activity "must occur on Colombian territory" and that its only obligation is to meet a standard of due diligence in preventing drift across the border[1451]. Colombia further asserts that "a 100m buffer zone from the boundary river" is perfectly adequate to prevent spray drift reaching Ecuador[1452]. These statements require a firm response. Colombia has voluntarily adopted a 10 kilometre buffer zone over the past three years. Ecuador is doing no more than asking the Court to make that same buffer zone legally constraining upon Colombia; Ecuador invites the Court to order that this buffer zone should be permanently maintained. In this regard, a number of comments are justified.

8.16 First, Ecuador notes Colombia's concession that no spray planes may cross the border into the territory of Ecuador. The evidence in Chapter 2 shows clearly that Colombian planes have on a small number of occasions crossed the boundary with Ecuador whilst spraying[1453]. Ecuador insists on its right to ensure that this never happens, whether by design or by inadvertence. Accordingly,

[1451] CCM, Chap. 10, para. 10.11.

[1452] *Ibid.*

[1453] *See supra* Chap. 2, para. 2.163, n. 320; *see also*, R. John Hansman, Ph.D. & Carlos F. Mena, Ph.D., *Analysis of Aerial Eradication Spray Events in the Vicinity of the Border Between Colombia and Ecuador from 2000 to 2008*, p. 13 (Jan. 2011). ER, Vol. II, Annex 2.

Colombia can have no objection to that part of the order Ecuador has requested from the Court that concerns non-repetition of aerial intrusions.

8.17 Second, Ecuador notes the standard of due diligence to which Colombia professes attachment. As described in the *Memorial* and in Chapter 2 of this *Reply*[1454], Colombia has not met even this minimal standard, as spray has drifted across the border and caused harmful effects. This is the direct result of Colombia's failure to exercise proper diligence in respect of the conduct of the spraying activities: the chemicals used are inappropriate[1455]; the operational requirements intended to control spray drift are lax by comparison with the vast majority of other States[1456], and even these requirements have been regularly disregarded on tens of thousands of occasions, particularly in regard to the speed of the planes, the height at which they dispense the spray, droplet size, application rate, time of day, climatic conditions, etc., making it more likely that there will be spray drift and that it will be transported many kilometres into Ecuador[1457].

8.18 Third, the history of aerial spraying on the border plainly demonstrates that a 100 metre buffer zone is plainly inadequate: Colombian planes have conducted spraying operations thousands of times more than 100 metres from the

[1454] *See supra* Chap. 2, paras. 2.65-2.202; EM, Chap. 5, Sec. III and Chap. 6.

[1455] *See supra* Chap. 2, paras. 2.18-2.63.

[1456] *See supra* Chap. 4, paras. 4.99-4.114.

[1457] *See supra* Chap. 2, paras. 2.88-2.154.

border with Ecuador, yet toxic herbicides have drifted across the border well into Ecuador and given rise to risks and caused significant harm to Ecuadorian people, crops, livestock, forests and the environment[1458]. For these reasons, Ecuador maintains that a 10 kilometre buffer zone is the minimum acceptable parameter.

Conclusions

8.19 Contrary to the position adopted by Colombia, the Court's task is not limited to establishing that significant harm *has* occurred, although this is certainly *one* of the matters for decision by the Court. In light of the hazardous activity conducted by Colombia, and the patent risk of potential and irreversible damage, the obligations of assessment, cooperation, consultation and provision of information all arise in the context of a risk of potential harm. Accordingly, the relief sought by Ecuador is appropriate in respect of these procedural violations, in circumstances where Colombia has not met minimum international standards or the requirements of its own domestic law: the Court can and should order a 10 kilometre buffer zone. Moreover, Colombia's actions have caused measurable and serious harm to people, crops, property and the environment and would do so again if the spraying were to be resumed. Ecuador is entitled to all the relief it has sought, and it is entitled to quantify the monetary damages it seeks to recover in a later phase of the proceedings.

[1458] *See supra* Chap. 3.

SUBMISSIONS

SUBMISSIONS

On the basis of the facts and law referred to above, Ecuador requests the Court to adjudge and declare that:

(A) Colombia has violated its obligations under international law by causing or allowing the deposit on the territory of Ecuador of toxic herbicides that have caused damage to human health, property and the environment;

(B) Colombia shall indemnify Ecuador for any loss or damage caused by its internationally unlawful acts, namely the use of herbicides by aerial dispersion, and in particular:

(i) death or injury to the health of any person or persons arising from the use of such herbicides;

(ii) any loss of or damage to the property or livelihood of such persons;

(iii) violation of the human rights of such persons;

(iv) violation of the special rights of indigenous peoples;

(v) environmental damage or the depletion of natural resources;

(vi) the costs of monitoring to identify and assess future risks to public health, human rights and the environment resulting from Colombia's use of herbicides; and

(vii) any other loss or damage;

(C) Colombia shall:

(i) respect the sovereignty and territorial integrity of Ecuador;

(ii) respect the human rights of Ecuadorian nationals;

(iii) respect the special rights of indigenous peoples in Ecuador;

(iv) take no action to harm the natural environment in Ecuador;

(v) forthwith, take all steps necessary to prevent, on any part of its territory, the use of any toxic herbicides in such a way that they could be deposited onto the territory of Ecuador; and

(vi) prohibit the use, by means of aerial dispersion, of such herbicides within 10 kilometres of the border with Ecuador.

31 January 2011

Mr. Diego Garcia Carrión
Agent of the Republic of Ecuador

Certification

I certify that the annexes are true copies of the documents referred to and that the translations provided are accurate.

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Mr. Diego Garcia Carrión

Agent of the Republic of Ecuador

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