

EXHIBIT 9

EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

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ARIAS, <i>et al.</i> ,)	
	Plaintiffs,)	
)	Case No.1:01cv01908-RWR-DAR
	v.)	
)	
DYNCORP, <i>et al.</i> ,)	
	Defendants.)	
<hr/>)	
QUINTEROS, <i>et al.</i> ,)	
	Plaintiffs,)	
)	Case No.1:07cv01042-RWR-DAR
	v.)	
)	(Cases Consolidated for Case
)	Management and Discovery)
)	
DYNCORP, <i>et al.</i> ,)	
	Defendants.)	
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EXPERT WITNESS REPORT FOR PLAINTIFFS

December 17, 2010

Michael A. Wolfson, M.D., M.P.H.

**SYRACUSE OCCUPATIONAL AND ENVIRONMENTAL
MEDICINE CONSULTANTS**

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**ADVERSE HEALTH EFFECTS EXPERIENCED
BY EQUADORIAN CITIZENS RESULTING FROM
AERIAL SPRAYING OF ROUNDUP-BASED HERBICIDES
FOR PLAN COLOMBIA COCA PLANT ERADICATION**

I, Michael A. Wolfson, M.D., M.P.H., M.S., hereby submit this report knowing it will be used on behalf of the plaintiffs listed in the above-captioned case. I make this report, and set forth my opinions based upon my education, professional experience, and review of the deposition testimony and plaintiffs' questionnaires for the 20 test plaintiffs, and a review of the medical and scientific literature relevant to this matter.

A copy of my CV is attached as Exhibit "A". The CV contains my qualifications and a list of all publications authored by me.

A list of other cases in which, during the previous four years, I testified as an expert at trial or by deposition, is attached as Exhibit "B".

My standard hourly rates apply to this engagement. My standard rates are as follows: \$400/hour for medical consultation services; \$250/hour for travel; and \$4,800/day for testimony.

This report represents my evaluation of the available information regarding the *Arias, et al. v. DynCorp, et al.* and *Quinteros, et al. v. DynCorp, et al.* exposure cases. My opinions set forth herein are based upon the description of each test plaintiff's exposure to glyphosate-based herbicide, as described in each test plaintiff's deposition and information contained in each plaintiff's questionnaire. A chart with a summary of the reported exposure and health effects for each of the twenty test plaintiffs, as well as other relevant information, is attached as Exhibit "C". This evaluation addresses the adverse health effects experienced by the plaintiffs, as well as future risks they may face, as a result of aerial release of glyphosate-containing herbicides on or near the plaintiffs' homes and farms in the Equadorian countryside near the Columbian border.

I am a physician licensed to practice medicine in the states of New York, Massachusetts, and Rhode Island. I received an M.S. in Pharmacology from Northeastern University in 1977, an M.D. from the State University of New York (SUNY) Health Science Center at Syracuse in 1981, and an M.P.H. from Harvard School of Public Health in 1987. I have been Board Certified in Family Medicine since 1984. I am Fellowship-trained and Board Certified in Occupational Medicine (1995) with clinical training in occupational and environmental medicine at Harvard and the University of Massachusetts Medical Center in Worcester, Massachusetts. I have engaged in the practice of Occupational and Environmental Medicine for over twenty-two years while also engaging in research and teaching of attending physicians, medical residents, medical students, and other health professionals. I have taught at Brown Medical School, Yale School of Medicine, and Upstate Medical University (UMU), College of Medicine (formerly the State University of New York (SUNY) Health Science Center at Syracuse). I am currently a lecturer in Bioethics at Upstate Medical University, College of Medicine. I have evaluated over ten

thousand patients with occupational and environmental medicine problems during the course of my practice. I have rendered thousands of diagnoses and opinions on the causation of disease involving complex issues of toxic exposures. In addition, my expertise was recognized by the Chief Judge of the Rhode Island Workers' Compensation Court, who appointed me in 1991 as one of eleven statewide consultants on the State's first Workers' Compensation Medical Advisory Board. I have been the Medical Director of Syracuse Occupational and Environmental Medicine Consultants since 1995.

My qualifications to offer an opinion in this case, in addition to my extensive training and expertise in occupational and environmental medicine, include the following. My completion of intensive residency training in Family Practice (1984) followed by Board Certification in Family Practice/Family Medicine (1984 and recertification in 1991, 1997, and 2004) qualified me to practice in multiple areas in addition to internal medicine including, but not limited to, the fields of pediatrics, obstetrics, gynecology, and community health. My clinical practice since 1984 has included the care of tens of thousands of infants, children, men, and women, including environmental and occupational risk assessment and toxic exposure evaluations, diagnoses, treatment, and referrals.

In forming my opinions, I have reviewed materials which include, but are not limited to, the following: questionnaires and depositions for 20 plaintiffs; the expert reports of Dr. Marco Arturo Campana Karolys; Response from EPA Assistant Administrator Johnson to Secretary of State, August 19, 2002; CRS Report for Congress, Drug Crop Eradication and Alternative Development in the Andes, November 18, 2005; a specimen label for Roundup ULTRA (copyright 2000 by C&P Press); and a Monsanto Co. Roundup Ultra Herbicide MSDS, MON 65005 – 6840-00N085083..

In addition, I have evaluated relevant peer-reviewed scientific and medical literature including, but not limited to, that regarding glyphosate, Roundup, and surfactants. Please note that this report is based on exposure data and medical information that I have received to date and may be supplemented or amended in the future based on my receipt of additional information. I also reserve the necessity of amending this report once the U.S. Department of State has completed its production of documents relating to scientific studies of the harmful effects of Roundup Ultra, Cosmo-Flux 411F, and any other substances utilized for coca plant eradication in Columbia.

Source of Exposure

Based upon State Department and Congressional Research Service (CRS) reports, as well as other material reviewed for the preparation of this report, I have obtained important information regarding the aerial spraying of herbicides for Plan Colombia coca plant eradication. This information has been supplemented by descriptions given by plaintiffs in their questionnaires and depositions. According to State Department publications, Roundup Ultra, consisting of 44% glyphosate, 15% surfactant (polyoxyethyleneamine (POEA)), and 55% water, is mixed by Columbian authorities to produce a coca spray mixture. The coca spray mixture is composed of 44% Roundup Ultra, 1% Cosmo-Flux 411F, and 55% water. Although disclosure

of the chemical constituents in Cosmo-Flux 411F has not been made to date, to my knowledge, this “adjuvant” is likely another form of surfactant.

The label information for Roundup Ultra, copyrighted in 2000, states: “Do not add surfactants, additives containing surfactants, buffering agents or pH adjusting agents to the spray solution when Roundup Ultra herbicide is the only pesticide used.” The coca spray mixture apparently contains Roundup Ultra as the only pesticide/herbicide in the solution. Therefore, the coca spray mixture used by Plan Colombia, fails to follow manufacturer’s label directions for the use of this herbicide. In addition, the Roundup Ultra label directions indicate: “DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL.” Label directions indicate that the concentration of Roundup Ultra in the final aerial spray solution should be approximately 1.7% to 8.3% by volume. According to State Department documents, Roundup comprises 44% of the coca spray mixture, which is approximately 5.3 to 26 times the concentration of Roundup recommended by the manufacturer for aerial spraying.

In summary, the coca spray mixture used for Plan Colombia spraying contains concentrations of Roundup that greatly exceed concentrations recommended by the manufacturer. In addition, the use of Cosmo-Flux 411F in the coca spray mixture is also contraindicated by the manufacturer’s label instructions. Therefore, the aerial spraying to which plaintiffs were exposed through application errors and/or “spray drift” subjected them to concentrations of toxic substances including, but not limited to, glyphosate and POEA, which were apparently never contemplated by the manufacturer of Roundup. These concentrations of toxic substances in the coca spray mixture also greatly exceed concentrations approved for use in the United States. These excessive concentrations of glyphosate and surfactant are also markedly greater than the concentrations used in testing in the peer-reviewed literature (see references below) recognized as causative agents of many of the health effects experienced by the plaintiffs.

Finally, glyphosate and glyphosate-based herbicides have been recognized in the peer-reviewed literature as likely causative agents in the development of several cancers. These include, but are not limited to, non-Hodgkin’s lymphoma, hairy cell leukemia, and multiple myeloma. The exposure of the plaintiffs to these herbicides, as a result of aerial spraying, very likely places them at significant increased risk for the development of cancers in the future.

Current and Potential Health Effects Related to Glyphosate Exposure

The plaintiffs have experienced acute and chronic health effects from their exposures to aerial spraying of Roundup-containing coca spray mixtures. The health complaints described and reported by each of 19 test plaintiffs include, but are not limited to: *itchiness to the skin, nose, and eyes; skin irritation; burning sensation to the skin and eyes; rash; vomiting; respiratory problems; headaches; dizziness; stomach aches; diarrhea; and burning throat*. It is my opinion, within a reasonable degree of medical certainty, that most, if not all, of the health complaints experienced by these plaintiffs are consistent with exposure to glyphosate-based herbicide spray.

In addition, as noted above, these plaintiffs are also at greater risk for developing cancers in the future. These cancers have been identified in the medical literature as likely to result from exposures to glyphosate-based herbicides.

Future Medical Care/Medical Monitoring

The plaintiffs in this case, are likely, within a reasonable degree of medical certainty, to be at increased risk for significant adverse health effects in the future. Those individuals who have already experienced and/or been diagnosed with exposure-related medical conditions or diseases which have persisted, as well as those who will develop exposure-related conditions/diseases in the future, will need medical care for these conditions/diseases.

A surveillance regime for the early detection of disease associated with the exposures of concern is comprised of several components. First, exposed individuals should undergo a yearly history/physical examination by a physician with occupational and environmental medicine expertise, including a detailed interval exposure history. Second, exposed individuals should undergo a variety of clinical tests to identify laboratory, radiologic, and/or functional abnormalities, which may result from their toxic exposures. Evaluations of neurologic and neuropsychological functioning in this group of exposed individuals are also indicated. Interval evaluations by a neurologist and/or neuropsychologist would be appropriate for those individuals with established signs or symptoms of disease. Monitoring of children may require a different schedule from that for adults, dependent on the child's age and stage of development.

The medical surveillance regime described above is not part of routine health maintenance for well adults or children. However, individuals with known past or ongoing toxic exposures, or those in a known exposure area, require the specific medical screening/surveillance delineated in order to detect suspected or undiagnosed disease.

In summary, the exposed plaintiffs in this case are at increased risk for significant adverse health effects in the future. Those individuals with already diagnosed exposure-related medical conditions may need comprehensive medical care for the remainder of their lives. A medical monitoring program allows for the early detection of disease. This monitoring regime is considerably different from that recommended for normal healthy adults or children with no known toxic exposures. Finally, a monitoring regime is necessary and indicated for an exposed group of individuals such as these plaintiffs, within a reasonable degree of medical certainty.



Michael A. Wolfson, M.D., M.P.H., M.S.
December 17, 2010

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Veillett C, Navarette-Frias C. Drug Crop Eradication and Alternative Development in the Andes. CRS Report for Congress, Order Code RL33 163, November 18, 2005.

CERTIFICATE OF SERVICE

I certify that on December 17, 2010, I served a copy of the foregoing via email and U.S. first class mail, postage prepaid, on the following counsel for defendants:

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/s/ Susana Tellez

Susana Tellez

EXHIBIT A

MICHAEL A. WOLFSON, M.D., M.P.H.

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BOARD CERTIFICATIONS

Occupational Medicine, 1995 - American Board of Preventive Medicine
Family Practice, 1984; recertified 1991, 1997, 2004 - American Board of Family Practice
Diplomate of the National Board of Medical Examiners

OTHER SPECIALTY CERTIFICATIONS

Alcoholism and Other Drug Dependencies, 1990 - American Society of Addiction
Medicine

MEDICAL LICENSES

New York Medical License No. 191041
Massachusetts Medical License No. 49891
Rhode Island Medical License No. MD6478 (Currently inactive)

EDUCATION

M.P.H., June 1987
Harvard School of Public Health, Boston, MA

M.D., May 1981
State University of New York, Upstate Medical Center
College of Medicine, Syracuse, NY

M.S. (Pharmacology), May 1977
Northeastern University, Boston, MA

B.A. (Psychology), June 1970
University of Rochester, Rochester, NY

PROFESSIONAL TRAINING

Center for Alcohol and Addiction
Studies
Brown University
Providence, RI

Post-Doctoral Fellow
September 1988 - September 1989

University of Massachusetts
Medical Center
Worcester, MA

Occupational Medicine Fellow
July 1987 - June 1988

Pawtucket Memorial Hospital
Pawtucket, RI

Resident in Family Medicine
June 1981 - June 1984

ACADEMIC AFFILIATIONS

Department of Bioethics and Humanities
SUNY Upstate Medical University
Syracuse, NY

Lecturer
November 2009 – present

Department of Family Medicine
SUNY Health Science Center at Syracuse
Syracuse, NY

Clinical Instructor
June 1995 – April 2004

Department of Preventive Medicine
SUNY Health Science Center at Syracuse
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Clinical Assistant Professor
October 1992 - February 1995

Brown University School of Medicine
Providence, RI

Physician, Program in Occupational
Medicine
Affinity Group Faculty Member
October 1990 - October 1992

Project ADEPT (Alcohol and Drug
Education for Physician Training)
Center for Alcohol and Addiction Studies
Brown University
Providence, RI

Faculty Committee Member
February 1989 - October 1992

Michael A. Wolfson, M.D., M.P.H.

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WORK EXPERIENCE

Medical Advisory Committee
Health Intervention Project
Richmond County Health Department
Augusta, Georgia

Advisory Committee Member
May 1998 - June 2001

Health Services Association of
Central New York, Inc.
Baldwinsville, NY

Family Practice Physician
June 1995 - October 1997

Syracuse Occupational and Environmental
Medicine Consultants
Dewitt, NY

Medical Director/Medical Consultant
February 1995 - present

Central New York Occupational
Health Clinical Center
Syracuse, NY

Associate Medical Director
October 1992 - February 1995

Yale Occupational Medicine Clinic
Groton, CT

Occupational Medicine Physician
July 1992 - October 1992

State of Rhode Island
Workers' Compensation Court
Providence, RI

Board Member
Medical Advisory Board
January 1992 - October 1992

Union Health Center
International Ladies Garment
Workers Union
Fall River, MA

Medical Consultant
January 1992 - October 1992

New Visions Health Center
Tiverton, RI

Medical Consultant
October 1991 - October 1992

Braintree Hospital
Braintree, MA

Occupational Medicine Staff Physician
October 1990 - June 1991

Faculty Development Workshops
Center for Alcohol and Addiction
Studies
Brown University
Providence, RI

Workshop Faculty Member
January 1990 - October 1992

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Harvard Community Health Plan
of New England
Providence, RI

Primary Care Physician
December 1989 - July 1990
August 1991 - October 1992

Good Hope Center
West Greenwich, RI

Medical Consultant
August 1989 - December 1989

U.S. Public Health Service
Occupational Health Unit
Boston, MA

Medical Consultant
August 1988 - November 1989

New England Laborers' Training
Academies
Pomfret, CT
Hopkinton, MA

Occupational Medicine Consultant
January 1988 - October 1992

Grafton Job Corps
North Grafton, MA

Medical Consultant
October 1987 - September 1988

Health Resources
Woburn, MA

Occupational Medicine Consultant
October 1986 - August 1988
July 1990 - September 1990

Marathon House
Providence, RI

Medical Consultant
April 1986 - October 1992

Pawtucket Memorial Hospital
Pawtucket, RI

Emergency Room Staff Physician
July 1985 - September 1986

Walk-In Medical Centers
Massachusetts and Rhode Island

Primary Care Physician
June 1984 - October 1985

INVITED PRESENTATIONS

Laswell A, Wolfson MA, McQuade WH, Parmentier AH, Liepman MR, Levy SM, Dube CE, Young CM, Feldman A. "Differences in clinical approaches to alcoholism and hypertension by primary care residents." National Conference of the Association for Medical Education and Research on Substance Abuse, Washington, DC, November 1989.

Wartenberg AA, Liepman MR, Wolfson MA, Nirenberg TD, Silvia LY. "Introduction of the CIWA-A to a psychiatric ward: staff acceptance and impact on clinical care." National Conference of the Association for Medical Education and Research on Substance Abuse, Washington, DC, November 1989.

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PUBLICATIONS

Himmelstein J., Wolfson M, Pransky G, Morse D, Ross A, Gill J. Lead poisoning in bridge demolition workers: Massachusetts. MMWR 1989; 38:687-93.

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Laswell AB, Liepman MR, McQuade WH, Wolfson MA, Levy SM. Comparison of primary care residents' confidence and clinical behavior in treating hypertension versus treating alcoholism, Academic Medicine, 1993; Vol.68, No. 7:580-582.

EXHIBIT B

TESTIMONY LIST
Michael A. Wolfson, M.D., M.P.H.
2006-2010

Fred Beck, et al., vs. Koppers Industries, Inc., et al. - Mississippi
Depositions - 3/15/06 and 3/16/06

Mary Green, et al. v. Alpharma, Inc., et al. - Arkansas
Deposition - 2/28/06

*James Alderman, et al., v. Clean Earth, Inc., et al.; McDuffy, et al., v. Clean Earth, Inc., et al.;
Mills, et al., v. Clean Earth, Inc., et al.* - Delaware
Deposition – 11/16/06

Ward v. Snap-On Tools (Pennsylvania Workers' Compensation Claim No. 296516) –
Pennsylvania
Deposition – 12/17/07

Bolton, et al. v. Kirk, et al. – Washington, D.C.
Arbitration Testimony – 10/17/09

Scott Ward and Bonnie Ward vs. Carthage Area Hospital and Kenneth Fish, D.O. – New York
Trial Testimony - 5/19/10

Bolender v. Tops Markets, LLP – New York
Trial Testimony – 8/18/10

EXHIBIT C

PLAINTIFF INFORMATION SHEET
(Prepared by Michael A. Wolfson, M.D., M.P.H.)

Name on Questionnaire	DOB	Age	Residence	Reported Exposure Circumstances	Medical Complaints	Comments
FAMILY OF LUCIANO QUEVEDO JIMINEZ			Lives in San Lorenzo in the Sucumbios Province, 4 km from the Columbian border			Luciano and Rosa lived with their children, including Edith and Robinson.
Luciano Quevedo Jimenez-45	6/5/60	50		Saw a plane flying near his farm with a white fog behind the plane; felt itchiness on his skin afterwards.	Skin itchiness and irritation; headache; aching bones; fever	Noticed crops turned yellow; lost coffee, plantain, cacao, and pasture land; also lost cattle, pigs, and chicken.
Rosa Altamirano Miranda	1/9/60	50		Remembers seeing a thin fog coming from a plane.	Headache, fever, diarrhea, rash. Believes it has affected his eyesight.	
Edith Quevedo Altamirano	7/12/95	15		Remembers seeing a plane with white smoke coming out of the tail when she was on the school playground at age 5.	Fever, headache, rash, diarrhea, skin blemishes, headaches, nose irritation.	
Robinson Quevedo Altamirano	12/15/00	10			Diarrhea and vomiting	

Plaintiff Information Sheet
Michael A. Wolfson, M.D., M.P.H.

Name on Questionnaire	DOB	Age	Residence	Reported Exposure Circumstances	Medical Complaints	Comments
FAMILY OF DOCITEO DANDOVAL QUINTERO			Lives in Mataje, Margen Derecho de San Lorenzo, Esmeraldas Province, approximately 10 meters from the Columbian border			Dociteo lives with his wife and children, including Edgar and Wilbur.
Dociteo Sandoval Quintero	11/25/49	61		Saw planes spraying near farm in 2003. Saw white smoke coming out of the planes and saw that they were spraying liquid. He saw an oily liquid on his skin and the ground. He saw	Itchiness, allergic, vomiting, dizziness, headache	He noted that plants withered immediately and wildlife died after the spraying.
Edgar Sandoval Cortez	8/30/84	36		Remembers seeing a plane spraying near his father's farm in 2003 and saw the breeze blow white cloud and he watched it fall on his father's farm and himself. He saw "oily stuff" on the plantains	Vomiting, headaches, diarrhea, rash, itching, allergies	
Wilbur Sandoval Cortez	10/3/95	15		Remembers seeing planes spraying 3 times. He remembers seeing the mist fall on him when he was in the schoolyard.	Itchiness, rash, diarrhea, headaches, dizziness, stomach aches	

Plaintiff Information Sheet
Michael A. Wolfson, M.D., M.P.H.

Name on Questionnaire	DOB	Age	Residence	Reported Exposure Circumstances	Medical Complaints	Comments
FAMILY OF JORGE SALAS TAPIA			Lives in the Village of Chone 1, Sucumbios Province, 2 km from the border of Colombia and close to the San Miguel River.			Jorge lives with his wife Laura, their children, including John, and a daughter-in-law.
Jorge Salas Tapia	7/21/54	56		Saw a dark-colored spray coming from a plane in December 2000. Felt it on his skin. Also saw planes in May 2001.	Frequent colds, throat pain, skin irritation, dizziness, headaches	After the spraying, he noted that plants changed and wildlife started to disappear. Saw a film on top of the water in the brook. Noticed a different taste to the water. Chicken and pigs started to die after 8 days after the spraying in December 2000. Crops affected. In 2002, cacao bushes died; harvested little coffee; rice and corn didn't produce anything.
Laura Sanchez Arevalo	3/8/63	47		First saw planes spraying – leaving a race of smoke or fog behind - near their farm in June 2002. The wind blew a white cloud over their home. Smelled like chemicals. Also saw planes in January 2003 and October 2003.	Respiratory diseases, burning nose and eyes, headache, stomach burning	Noted that 8-15 days later saw changes in plants, leaves turned yellow; crops died; birds no longer flew and the fish died because of the contamination in the water. Told by Dr. Viera that problems and infections to the respiratory tracts were caused by exposure.
John Salas Sanchez	12/5/93	17		Remembers seeing planes on 2 occasions and hearing them on a third. He saw “white smoke” trailing behind the planes and fall on everything – plants, animals, etc. He saw the fog and mist come into the house, which was open.	Respiratory problems, burning throat, bones hurt, headache; throat is still burning.	Noted that leaves on plants turned yellow; plants dried up and wildlife died after 2 weeks; hens, pigs, horses, and dogs died.

Plaintiff Information Sheet
Michael A. Wolfson, M.D., M.P.H.

Name on Questionnaire	DOB	Age	Residence	Reported Exposure Circumstances	Medical Complaints	Comments
FAMILY OF SANTOS CALERO ENCARNACION			Lives in the Village of Chone 2, Sucumbios Province, approximately 500 meters from the Colombian border.			Santos lives with his wife Calixta and their children, including Betty, and granddaughter Yuli.
Santos Calero Encarnacion	11/12/44	66		Exposed in 2001; saw a small spraying over the river.	headaches, dizziness, vomiting, skin infection	Santos was told he had infections because of the fumigations at Marco Vinicio Iza Hospital.
Calixta Pineda Bravo	11/2/44	66		Remembers seeing planes spraying herbicide near their farm in August 2003. It was like a fog that issued out of the planes. A white fog. It smelled...like a chemical.	Headaches, queasiness, pimples and itching on the skin, body pains, uterine infections. Discussed prior liver and kidney problems in the deposition.	Calixta was told that she could have gotten sick from drinking rainwater contaminated by glyphosate from fumigation; told it could give her uterine cancer. Noticed black spots on plants, and then crops died.
Betty Calero Pineda	12/11/74	36		Remembers seeing planes and helicopters spraying along the border in August 2003.	Headache, itchiness, dizziness, cold, throat pain	
Yuli Calero Pineda	6/18/98	12			Skin irritation, vomiting, headache, dizziness, bronchitis	

Plaintiff Information Sheet
Michael A. Wolfson, M.D., M.P.H.

Name on Questionnaire	DOB	Age	Residence	Reported Exposure Circumstances	Medical Complaints	Comments
FAMILY OF VICTOR MESTANSA LLANOS			Lives in Puerta Mestanza, Province of Sucumbios, approximately 100 meters from the border.			Victor lives with Ercilia and their children. Son Edy and Edy's daughter Jennifer lived there at different times. Jennifer lived on the farm from 2000-2002, during the spraying.
Victor Mestansa Llanos	3/10/50	60		First saw planes flying near his farm at the end of 2000 for 3 days. He described seeing white smoke coming from the planes. As it was carried by the wind, it "fell over my property." He also saw 4 helicopters. He also saw planes spraying in 2002.	Stinging of eyes, burning throat, dizziness, headaches, stomach aches, pimples on the skin, gastric problems, skin infections	Noted that the fumigation killed his crops and fish, hens, and ducks. Animals began to die instantly; plants turned yellow the next day. Corn didn't die but didn't produce.
Ercilia Martina Bosquez Garcia	11/11/52	58		Remembers seeing spraying in 2000 and 2002.	Headaches, respiratory problems, skin rash, stomach ache, diarrhea, itching nose, burning throat; has had stomach ache, sore throat and rash since exposure.	
Jennifer Mestanza Bosquez	6/17/96	14		Remembers spraying on 2 different occasions. Remembers a white cloud coming from the planes and being frightened.	Headache, stomach ache, itchiness, white spots on the skin, eyes burned, and dizziness	

Plaintiff Information Sheet
Michael A. Wolfson, M.D., M.P.H.

Name on Questionnaire	DOB	Age	Residence	Reported Exposure Circumstances	Medical Complaints	Comments
FAMILY OF EDGAR BALCAZAR BRAVO			Lives in San Lorenzo in the Province of Sucumbios, 5 km from the Colombian border.			Edgar lives with his wife and 2 children.
Edgar Balcazar Bravo	11/11/70	40		2001 or 2002 (in questionnaire). Remembers seeing a “white cloud” coming out of planes spraying along the Colombian border. As the clouds dissipated, he remembers a “bad smell” and felt a sensation on his skin.	Dizziness, pain all over the body, headaches, dizziness, diarrhea, stomach ache, problems breathing, burning of the eyes	
FAMILY OF ALVIA ALVAREZ VARGAS			Lives in Town of Riberas del Oriente, 2 km from San Pedro-El Condor, Province of Sucumbios, 3 km from the Colombian border			Alvia lives with her children; her husband is deceased.
Alvia Alvarez Vargas	4/13/56	54		2002-2006; April 6, 2001 saw 5 planes and 6 helicopters spraying while she was on her farm; drops of water fell like a fog. It was white.	Body aches, headaches, dizziness, stomach ache, diarrhea, spitting up blood	Noted that plants recovered a little after fumigations ended, but not like before; there are no birds or fish left; crops died.

EXHIBIT 2

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

<hr/>)	
ARIAS, <i>et al.</i> ,)	
	Plaintiffs,)	
)	Case No.1:01cv01908-RWR-DAR
	v.)	
)	
DYNCORP, <i>et al.</i> ,)	
	Defendants.)	
<hr/>)	
QUINTEROS, <i>et al.</i> ,)	
	Plaintiffs,)	
)	Case No.1:07cv01042-RWR-DAR
	v.)	
)	(Cases Consolidated for Case
)	Management and Discovery)
)	
DYNCORP, <i>et al.</i> ,)	
	Defendants.)	
<hr/>)	

EXPERT WITNESS REBUTTAL REPORT FOR PLAINTIFFS

February 11, 2011

Michael A. Wolfson, M.D., M.P.H.

**SYRACUSE OCCUPATIONAL AND ENVIRONMENTAL
MEDICINE CONSULTANTS**

P.O. Box 47
Dewitt, New York 13214

**REBUTTAL REPORT IN RESPONSE TO
DEFENSE EXPERT WITNESS REPORTS
MICHAEL A. WOLFSON, M.D., M.P.H., M.S.**

**ADVERSE HEALTH EFFECTS EXPERIENCED
BY ECUADORIAN CITIZENS RESULTING FROM
AERIAL SPRAYING OF ROUNDUP-BASED HERBICIDES
FOR PLAN COLOMBIA COCA PLANT ERADICATION**

I, Michael A. Wolfson, M.D., M.P.H., M.S., hereby submit this report knowing it will be used on behalf of the plaintiffs listed in the above-captioned case. I make this report, and set forth my opinions based upon my education; my professional experience; and my review of the reports submitted by defense experts, plaintiffs' deposition testimony and questionnaires, the medical and scientific literature relevant to this matter, and other material listed below.

I submitted an expert report in this case on December 17, 2010. I am submitting this rebuttal report in response to reports filed by Defendant's experts on January 20, 2011. This report represents my evaluation and rebuttal of the opinions offered by the Defendant's experts, using available information regarding the *Arias, et al. v. DynCorp, et al.* and *Quinteros, et al. v. DynCorp, et al.* exposure cases. My December, 2010 expert report summarized my initial opinions regarding the plaintiffs' exposures and the adverse health effects the plaintiffs have experienced. I also assessed future risks to the plaintiffs' health, as a result of past and future aerial spray exposures to glyphosate-containing herbicides (GBH) on or near the plaintiffs' homes and farms in the Ecuadorian countryside near the Colombian border.

I am a physician licensed to practice medicine in the states of New York, Massachusetts, and Rhode Island. I received an M.S. in Pharmacology from Northeastern University in 1977, an M.D. from the State University of New York (SUNY) Health Science Center at Syracuse in 1981, and an M.P.H. from Harvard School of Public Health in 1987. I have been Board Certified in Family Medicine since 1984. I am Fellowship-trained and Board Certified in Occupational Medicine (1995) with clinical training in occupational and environmental medicine at Harvard and the University of Massachusetts Medical Center in Worcester, Massachusetts. I have engaged in the practice of Occupational and Environmental Medicine for over twenty-two years while also engaging in research and teaching of attending physicians, medical residents, medical students, and other health professionals. I have taught at Brown Medical School, Yale School of Medicine, and Upstate Medical University (UMU), College of Medicine (formerly the State University of New York (SUNY) Health Science Center at Syracuse). I am currently a lecturer in Bioethics at Upstate Medical University, College of Medicine. I have evaluated over ten thousand patients with occupational and environmental medicine problems during the course of my practice. I have rendered thousands of diagnoses and opinions on the causation of disease involving complex issues of toxic exposures. In addition, my expertise was recognized by the Chief Judge of the Rhode Island Workers' Compensation Court, who appointed me in 1991 as one of eleven statewide consultants on the State's first Workers' Compensation Medical Advisory Board. I have been the Medical Director of Syracuse Occupational and Environmental Medicine Consultants since 1995.

My qualifications to offer an opinion in this case, in addition to my extensive training and expertise in occupational and environmental medicine, include the following. My completion of intensive residency training in Family Practice (1984) followed by Board Certification in Family Practice/Family Medicine (1984 and recertification in 1991, 1997, and 2004) qualified me to practice in multiple areas in addition to internal medicine including, but not limited to, the fields of pediatrics, obstetrics, gynecology, and community health. My clinical practice since 1984 has included the care of tens of thousands of infants, children, men, and women, including environmental and occupational risk assessment and toxic exposure evaluations, diagnoses, treatment, and referrals.

In forming my opinions, I have reviewed materials which include, but are not limited to, the following: reports submitted by defense expert consultants Robert I. Krieger, Gary M. Williams, M.D., Joseph M. DiTomaso, Seymour Grufferman, M.D., and Roger D. Smalligan, M.D.; Toxicology Medical Reports for Edgar Balcazar Brazo and the Quevado Family; the Report on the Investigation of the Impacts of the Fumigations Along the Ecuadorian Border by Dr. Adolfo Maldonado, et al, June 2001; Green Alert 115, "The Fumigations are Dangerous", September 2001; questionnaires and depositions for 20 plaintiffs; the expert reports of Dr. Marco Arturo Campana Karolys; Response from EPA Assistant Administrator Johnson to Secretary of State, August 19, 2002; CRS Report for Congress, Drug Crop Eradication and Alternative Development in the Andes, November 18, 2005; a specimen label for Roundup ULTRA (copyright 2000 by C&P Press), a label for Cosmo-Flux 441 F, and a label for Roundup Pro; a Monsanto Co. Roundup Ultra Herbicide MSDS, MON 65005 – 6840-00N085083; a document with the chemical composition of Cosmo-Flux 411 F; and confidential documents provided by defendants.

In addition, I have evaluated relevant peer-reviewed scientific and medical literature including, but not limited to, material regarding toxicological, environmental, and human health effects of herbicides, glyphosate (G), Roundup and surfactants; principles and practices of occupational and environmental medicine; principles of clinical toxicology, preventive medicine, and public health; and animal and human carcinogenesis. A list of references is included at the end of this report. Please note that this report is based on exposure data and medical information that I have received to date and may be supplemented or amended in the future based on my receipt of additional information. I also reserve the necessity of amending this report once the U.S. Department of State has completed its production of documents relating to scientific studies of the harmful effects of Roundup Ultra, Cosmo-Flux 411F, and any other substances utilized for coca plant eradication in Colombia or related to Plan Colombia.

In reviewing the reports from Defendant's experts, it is clear that they have disregarded a considerable collection of literature identifying cytotoxic, genotoxic, mutagenic, and carcinogenic effects of glyphosate-based herbicide (GBH) formulations (including many forms of Roundup, such as those used in the Plan Colombia spraying). These toxicologic effects have been identified in numerous animal species as well as humans. The adverse effects of glyphosate and glyphosate-based herbicide formulations must be considered in any evaluation of the past,

present, and future health status of the plaintiffs in this case as well as other innocent bystanders who have been or may be subject to exposures from Plan Colombia spraying. As a result of DynCorp's and its consultants' utilization of outdated and unreliable U.S. regulatory information (and apparent aerial eradication procedures, which I believe, clearly violate U.S. government standards for herbicide use as well as common sense and public health standards), the plaintiffs and other exposed bystanders have unfortunately become "collateral damage" of Plan Colombia.

The hazards of aerial spraying of pesticides (including GBH) have been recognized for years before Plan Colombia aerial eradication began.¹ It has been noted in regard to GBH, that a buffer zone as wide as 1200 meters surrounding the target spray zone could be necessary to prevent damage to untargeted vegetation². The literature regarding aerial spraying and drift parallels the development of the substantial body of peer-reviewed scientific and medical literature implicating G and GBH in the development of animal and human cancers.³ EPA apparently disregarded this information in its continuing registration and re-registration of Roundup and other GBHs.

Although, as noted above, a substantial body of literature has identified causative links between G and GBH exposures and animal carcinogenesis as well as several human lymphohematopoietic cancers (non-Hodgkin's lymphoma (NHL), hairy cell leukemia (HCL), and multiple myeloma (MM)),⁴ EPA, other regulatory bodies, and government and international agencies (USDOS, OAS, etc.) have failed to take these hazards into consideration when making policy decisions. Defendants, their expert consultants, and DOS have relied upon EPA assertions of the safety of G and GBH in defending the activities undertaken through Plan Colombia eradication efforts. Therefore, it is my opinion that this program disregards the recognized hazards posed by chemical agents such Roundup and other herbicides.

Documents describing the Plan Colombia Program refer to the need for secrecy regarding the schedule and location of aerial eradication activities in order to protect the pilots and other DynCorp and Department of State (DOS) employees from risks associated with engaging in a systematic program of coca plant eradication⁵. Unfortunately, this results in the lack of appropriate environmental health protection for uninformed and unsuspecting Ecuadorian residents, such as the plaintiffs, who have no foreknowledge of spraying activities in order to adequately protect themselves and their children.

One of the primary principles of occupational and environmental medicine is the avoidance of exposures, disease, and injuries through appropriate preventive measures. It is well known to both medical and public health professionals and citizens in the United States that exposures to pesticides place individuals at significant risk for adverse health effects. When limited aerial pesticide spraying programs are planned in the United States (e.g. aerial spraying of a swampy regions or wetlands to eradicate mosquitoes carrying West Nile Virus or Eastern

¹ Payne, 1990

² *ibid.*

³ *ibid*; De Roos, 2005, etc.

⁴ De Roos, 2005; Eriksson, 2008; Hardell, 1999; Hardell, 2002; etc.

⁵ U. S. Department of State, 2002

Equine Encephalitis (EEE)), significant advance public warnings are given through various news media advising individuals to take certain measures to avoid exposures to spraying. This responsible public health behavior is clearly lacking as a component of the Plan Colombia Program. The results have been inadvertent and occasionally widespread overspray and/or aerial drift of GBH, resulting in exposures to the plaintiffs in this case and likely exposure to other uninformed bystanders as well.

Acute and Chronic Health Effects of Glyphosate-Based Herbicides

According to the plaintiffs' accounts of their exposures, they were unaware at the time of the exposures of measures to take to minimize the acute and chronic effects. Such measures would include immediately flushing the eyes and skin with "plenty of water"; removing contaminated clothing immediately followed by washing/bathing and changing clothing; and seeking prompt medical attention for any persistent symptoms.⁶ In view of the human health effects of acute unprotected exposure to GBH from unexpected aerial spraying, it is not surprising that the plaintiffs in this case have reported varying symptoms and signs of acute toxic exposure/illness associated with GBH ingestion, inhalation, and dermal contact (described in the Plaintiff Information Sheet attached to my December 17, 2010 report).

The plaintiffs' medical complaints are consistent and include, but are not limited to, acute and chronic eye, nose, and throat irritation as well as vision problems; headache; dizziness; cough; skin irritation and rash; sore throat; respiratory problems; body aches; fever; vomiting; and diarrhea.⁷ These medical complaints, associated with GBH exposures, have been described in detail in the medical literature.^{8,9,10} A description of these symptoms and signs of illness, resulting from GBH exposure from aerial spraying, have been confirmed by Dr. Adolfo Maldonado and others in his group working with Accion Ecologica. These adverse health effects have been reported by Dr. Maldonado in individuals residing along the border of Ecuador and Colombia, where Plan Colombia spraying with GBH has taken place. Dr. Maldonado reports that 100% of residents living within 5 kilometers of the border have complained of symptoms and signs of illness markedly consistent with direct exposure to aerial spraying of GBH. Within a 10 kilometer strip of land along the border where spraying has taken place, Dr. Maldonado reports that 89% of the individuals have reported or have been found to have adverse health effects related to unprotected GBH exposures.¹¹ [A copy of his report is attached as Exhibit "B".]

Dr. Maldonado also reported that a significant percentage (approximately 1/3) of individuals with symptoms and signs caused by GBH spraying exposures had persistent symptoms of illness, including "fever, migraines, irritation of conjunctivas, diarrheas,

⁶ See Exhibit "A" - Roundup Ultra Label

⁷ Plaintiffs' questionnaires and depositions, etc.

⁸ Ellenhorn; Goldfrank; Keifer, 1997; etc.

⁹ Roundup Ultra MSDS

¹⁰ Cosmo-Flux 411 F MSDS

¹¹ Dr. Maldonado's Report, Exhibit "B"

vomiting...with a bigger presence of skin illnesses.”¹² Dr. Maldonado’s June 2001 report exhibits the consistency of the reported illnesses with the spraying. The time frame of the development of symptoms and their persistence, the relationship of the percentage of residents and the severity of their symptoms to their distance from the spray area, the large percentage of individuals with similar or identical health complaints in proximity to the spray areas, and concurrent descriptions of plant and animal damage provide consistent evidence of causation related to exposure to GBH aerial spraying.¹³

As noted above, the plaintiffs’ exposures to GBH render them at increased risk for chronic adverse health effects including persistent skin photosensitivity and rashes and upper respiratory tract irritation/inflammation.¹⁴ The irritative effects of GBH have been attributed, in many instances, to the corrosive characteristics of surfactants such as POEA. In addition, as noted above, the medical and scientific literature has long recognized the genotoxic, mutagenic, and carcinogenic properties of GBHs.¹⁵ For over 20 years, California has classified glyphosate as a mouse oncogen¹⁶. Carcinogenesis in other species has also been recognized in the scientific literature. In addition, an expanding body of medical literature for more than a decade has identified G and GBHs as human carcinogens which pose significant causative risks for NHL, HCL, and MM.¹⁷ The plaintiffs are at increased risk for developing these lymphohematopoietic cancers.

It should be noted that the International Agency for Research on Cancer (IARC) has provided cautionary guidance regarding toxic carcinogenic exposures long before the Plan Colombia spraying began. IARC has asserted that even “in the absence of adequate data on humans, it is biologically plausible and prudent to regard agents and mixtures for which there is sufficient evidence (see p. 24) of carcinogenicity in experimental animals as if they presented a carcinogenic risk to humans.”¹⁸ This caution was apparently not heeded in the development of Plan Colombia and the use of GBH although there were both animal and human reports in the literature of carcinogenicity of G and GBH.

EPA Regulations and Standards are Outdated and Not Protective of Human Health

A review of the EPA Integrated Risk Information System (IRIS) document on Glyphosate, last updated on January 11, 2011,¹⁹ indicates that the assessment of the chronic oral exposure Reference Dose (RfD) for non-carcinogenic effects was last revised on September 1, 1990. An inhalation exposure category section, for Reference Concentration (RfC), contains no data gathered or assessed by the EPA. Finally, the EPA’s glyphosate carcinogenicity assessment

¹² *ibid.*

¹³ Goldfrank, 2002; Keifer, 1997; Rosenstock & Cullen; Ellenhorn; etc.

¹⁴ Ellenhorn; Keifer, 1997; etc.

¹⁵ De Roos, 2005; Eriksson, 2008; Hardell, 1999; Hardell, 2002; etc.

¹⁶ Ellenhorn; etc.

¹⁷ De Roos, 2005; Eriksson, 2008; Hardell, 1999; Hardell, 2002; etc.

¹⁸ WHO, 1997

¹⁹ U.S. EPA IRIS, 1993

was last revised on October 1, 1993. Therefore, the RfD or oral intake for humans of 0.1 mg/kg/day, which allegedly represents a daily exposure “that is likely to be without an appreciable risk of [non-carcinogenic] deleterious effects during a lifetime”²⁰ is long outdated. Furthermore, the “principal and supporting studies” on which the EPA based its RfD determinations were all produced by the Monsanto Company, the original U.S. patent-holder, manufacturer, and supplier of GBHs.

The EPA IRIS document also indicates that developmental toxicity and carcinogenicity assessments were based solely on Monsanto studies produced in the 1980s. The only references in the EPA IRIS bibliography for glyphosate are Monsanto documents. This sole reliance on manufacturers’ information represents an inherent conflict of interest in the development of government regulations to protect the public health and renders the EPA’s conclusions about safety wholly unreliable. Furthermore, any assertion by the defendant and/or its experts of G or GBH safety or lack of environmental or human health effects based upon EPA research or regulatory determinations is also unreliable. This lack of validity and reliability of expert opinions based on long outdated EPA determinations/regulations also applies to defendant’s experts’ reliance on published research in which conclusions about safety and toxicologic effects incorporate these EPA standards.²¹

In regard to the general issue of registration of pesticides and specifically to the registration and re-registration of glyphosate, the EPA has not and does not require independent – i.e., not manufacturer-funded – proof of adequate assurance of human health and safety for the registration of pesticides. Furthermore, upon information and belief, when the EPA determines that a pesticide lacks an adequate margin of safety in normal use to protect human health, revoking registration places an undue financial burden on the EPA and taxpayers. The EPA may prohibit the further manufacture and sale of a pesticide that loses its registration. However, loss of registration requires the EPA by law to purchase any remaining stock of already manufactured pesticide or to allow the sale of a pesticide already deemed unsafe for use until remaining stocks are depleted. Examples of pesticides that have lost their registration and were “unloaded” on the public at “fire sale” prices have been 2,4,5-trichlorophenoxy acetic acid (2,4,5-T), a component of Agent Orange contaminated with the potent carcinogen 2,3,7,8 tetrachlorodibenzo dioxin (2,3,7,8-TCDD), and the carcinogenic organochlorine pesticide, chlordane.

The Plan Colombia coca eradication aerial spraying activities do not, upon information and belief, do not apparently comply with even the often inadequate safety standards required by the EPA and state regulatory agencies for the use of pesticides in the United States. Therefore, DynCorp, a U.S. corporation, acting under with the approval of the U.S. Department of State and the U.S. EPA, has engaged in herbicide crop eradication activities that would violate U.S. regulatory standards of the EPA, as well as the standards of other regulatory and scientific agencies. The plaintiffs in this case have been, as noted above, unwarned, uninformed, and unprotected by standards subjected to the toxicologic risks of Plan Colombia aerial spraying without their knowledge or consent.

²⁰ *ibid.*

²¹ *ibid*; other EPA documents; DOS documents reliant on EPA opinions; OAS CICAD reliant upon EPA; Monsanto documents; Williams, 2000; Solomon, 2005; etc.

Manufacturer's Instructions for Use of Roundup Ultra Have Been Disregarded by Defendants

Based on Monsanto's precautionary statements, and even in view of the already described inadequate hazard assessment of this product for at least the past 2 decades, Monsanto's directions for use include warnings about drift resulting from accidents or improper use. The use requirements include details regarding the personal protective equipment (PPA) and "restricted entry interval" (REI). Individuals are not to enter treated areas for at least 4 hours after spraying, entry before 4 hours requires "coveralls, waterproof gloves, shoes plus socks." Under precautionary statements, Monsanto's safety recommendations include "1) Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet." 2) Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Monsanto also warns that the product should be kept out of reach of children and that it causes eye irritation which requires medical attention if "irritation persists". Exposure to domestic animals by ingestion "may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.)." Animal symptoms persisting for longer than 24 hours require veterinary attention.²² (See also below under summary of opinion of defense expert Joseph M. DiTomaso.) A copy of this label, the Roundup Ultra 11/1/95 MSDS, and the Cosmo-Flux 411F MSDS (3/8/07 Safety Data Sheet) are included as Exhibit "A".

As also noted in my prior report, Monsanto provides detailed directions for "Application, Equipment, and Techniques".²³ Under "Aerial Equipment", Monsanto states, "Do not apply this product using aerial spray equipment except under conditions as specified within this label." The label continues: "Use the recommended rates of this herbicide in 3 to 15 gallons of water per acre unless otherwise specified on this label. Unless otherwise specified, do not exceed 1 quart per acre." These directions result in a maximum concentration of Roundup Ultra in the final spray solution of approximately 1.7% to 8.3% by volume, mixed with water. According to²⁴

Plan Colombia and Defendants' Experts Have Relied on Outdated Government Standards and Regulations and Medical and Scientific Literature Regarding the Safety of G and GBH

Summary of Experts' Opinions:

There is no basis for defense experts' assertions that Plan Colombia herbicide spraying could not cause plaintiffs' health complaints and medical conditions or that plaintiffs' exposures could lead to chronic medical problems, including the development of cancer.

²² See Exhibit "A", Roundup Ultra label and MSDS

²³ *ibid.*

²⁴ U.S. DOS, 2002

Joseph M. DiTomaso, Ph.D., Botanist

Dr. DiTomaso, in his “Summary of Expert Opinions”, incorrectly asserts that I have concluded that “the labeling for the glyphosate formulation used for the Plan Colombia spray mixture categorically prohibits the use of an additional surfactant like Cosmo-Flux.”²⁵ I did, in fact, quote the 2000 Roundup Ultra label, which clearly admonishes users for adding extra surfactants other than the polyoxyethyleneamine (POEA) contained in the Roundup Ultra Monsanto product. Furthermore, the Monsanto label states: “This is an end use product. Monsanto does not intend and has not registered it for reformulation.” [A copy of this label and the Roundup Ultra 11/1/95 MSDS are included as Exhibit “A”.]

The U.S. Department of State has indicated that the coca spray mixture used in the Plan Colombia program contains 44% Roundup Ultra, 1% Cosmo-Flux 411F, and 55% water. This mixture is applied at “a rate of 2.53 gallons per acre.”²⁶ At this rate, with a 44% concentration of Roundup Ultra, 142.5 ounces (4.45 quarts or 1.11 gallons) of Roundup Ultra per acre is being applied through aerial spraying of coca growing areas. The maximum amount of Roundup Ultra (RU) to be utilized in aerial spraying, according the Monsanto label, is 32 ounces RU in 3 to 15 gallons of water per acre. In exceptional circumstances, up to 48 ounces of RU in 3 to 5 gallons of water per acre may be utilized in aerial spraying. Given the maximal manufacturer’s recommended use of 48 ounces per acre, approximately 3 to 4.5 times the amount of RU per acre has been applied through Plan Colombia aerial spraying.

Robert I. Krieger, Ph.D., Entomologist

Dr. Krieger, according to his stated background and credentials, has no medical training, medical degree, or medical license. However, he has offered numerous medical opinions in his report. Although he asserts that he has experience in “environmental, human and animal toxicology; risk characterization; and risk assessment”, upon information and belief, he has not evaluated or treated patients as a physician. Therefore, due to his lack of medical experience, I have disregarded his clinical opinions regarding the plaintiffs in this case. However, I will address some of the numerous errors and misrepresentations of my opinions and the literature contained in his report.

Dr. Krieger claims that “no one has independently verified – much less *characterized or quantified* - the test plaintiffs’ alleged exposure to Plan Colombia spray mixture or the supposedly toxic dose that each plaintiff may have derived from that exposure.” To the contrary, Dr. Maldonado and the clinicians who cared for the plaintiffs and other Ecuadorians who sought medical assistance for illnesses related to their exposures to GBH spraying, have characterized the exposures sufficiently.²⁷

²⁵ Expert report of Joseph M. DiTomaso, Ph.D.

²⁶ U. S. DOS, 2002

²⁷ See Exhibit “B”, Dr. Maldonado’s report

Dr. Krieger's criticism of the lack of exposure quantification is inappropriately directed at the Ecuadorian plaintiffs. Had DynCorp, the DOS, and the EPA appropriately recognized the risks involved to innocent inhabitants of the targeted spray zones, a program paid for by DynCorp, Colombia, and/or the DOS could have been implemented to measure and characterize the environmental (air, water, soil, indoor dust) exposure concentrations before, during, and after spraying. An additional biologic monitoring program could have been implemented to characterize the exposures of every individual in or near the spray zone by testing for glyphosate in blood and urine and aminomethyl phosphonic acid (AMPA) in urine.²⁸ One group in Ecuador has performed testing of blood samples of Ecuadorians exposed to glyphosate and found clear evidence of DNA damage in the exposed individuals.²⁹

However, in the history of occupational and environmental medicine (i.e., in the long history of the use of toxic substances whose characteristics are known to the informed user and not to the uninformed but exposed), withholding information regarding risk or harm is the rule rather than the rare exception. This appears to be the case in the Plan Colombia spraying of bystanders.

In my December 17, 2010, report, I offered the opinion that the plaintiffs' health complaints were "consistent with exposure to glyphosate-based herbicide spray." My original opinion is clearly consistent with the depositions and questionnaire of the plaintiffs as well as the report of Dr. Marco Arturo Campana. I have expanded my opinion, as noted above, based on the previously available material as well as the report of Dr. Maldonado and additional material and literature, which I reviewed. Dr. Krieger also denies that GBH "in any relevant amount can cause chronic injuries." This claim is incorrect and refuted the extensive literature discussed above regarding GBH carcinogenicity.

Dr. Krieger is categorically wrong when he states that G and GBH "are virtually non-toxic to humans and terrestrial animals at typical levels of exposure."³⁰ In addition, the EPA "conclusion as to the safety of glyphosate"³¹ has been adequately refuted above. Dr. Krieger's claims about the EPA's "sound regulatory process" and "generally-accepted exposure standards" are also refuted above. Finally, Dr. Krieger references the outdated and unreliable EPA RfD derived from a claimed No Observed Adverse Effect Level (NOAEL) for glyphosate echoed incorrectly by Dr. Williams (another defense expert), whose review he cites as an authoritative source.³² In summary, his opinions are not reliable and are refuted by the medical and scientific literature cited throughout this report.

²⁸ Lauwerys RL, 2001.

²⁹ Paz-y-Miño, 2007; etc.

³⁰ De Roos, 2005, etc.

³¹ Krieger report, page 7

³² Williams, 2000

Roger D. Smalligan, M.D.

Dr. Smalligan, a physician, has offered the opinion that plaintiffs' medical problems "are endemic to the region without regard to any alleged effect of Plan Colombia herbicide spray". However, Dr. Smalligan, based on his anecdotal clinical practice experience and medical knowledge (not based on occupational and environmental medicine training or reference to the substantial and expanding literature regarding glyphosate and other herbicide exposures) offers the opinion that the plaintiffs' medical conditions could not be caused by exposure to GBH from aerial spraying. While he discusses detailed differential diagnoses of the plaintiffs' medical conditions, he inappropriately (and without basis) dismisses GBH exposures as a likely cause of their problems.

Dr. Smalligan claims that the timing of the plaintiffs' medical complaints are not consistent with "exposure to Plan Colombia herbicide", contrary to the timely evaluations by Dr. Maldonado.³³ He characterizes the medical histories they provided as unreliable. This unfortunately dismisses without cause the crucial component of any medical evaluation, the history provided by the patient. In addition, Dr. Smalligan provides no plausible basis for disregarding or disbelieving plaintiffs' medical histories.

Dr. Smalligan adopts an almost identically incorrect position as Dr. Krieger (see above). Dr. Smalligan faults the plaintiffs for being unable to provide "physical exam and laboratory or radiographic studies" to support their concerns regarding medical conditions caused by GBH aerial spraying. After spending 8 ½ years in Ecuador caring for impoverished patients, Dr. Smalligan has sufficient experience to know that the plaintiffs' had limited or no access to medical care at the times of their exposures and no knowledge and little opportunity to recognize the relationship of the GBH spraying to their medical problems.

Finally, Dr. Smalligan has disregarded the medical information available from Dr. Maldonado's report and other sources linking Plan Colombia spraying to the medical conditions of the plaintiffs and other innocent bystanders. I stand by my conclusion above, within a reasonable degree of medical certainty, that the GBH exposures are the most likely cause of the plaintiffs' medical problems, and the exposures are an independent risk factor for the development of lymphohematopoietic cancers in the future. Dr. Smalligan provides no plausible or compelling basis to for his opinion that toxic exposures could not be a cause of plaintiffs' medical complaints.

Gary M. Williams, M.D.

Dr. Williams offers the opinion that "the available scientific evidence does not support" my opinion that plaintiffs' exposures to GBH from aerial spraying places them at increased risk for the development of NHL, HCL, and MM in the future. Dr. Williams relies on his own review of glyphosate and Roundup³⁴ in support of his opinion that these toxic materials are not

³³ See Exhibit "B".

³⁴ Williams, 2000

genotoxic or carcinogenic. Of particular interest, Dr. Williams cites the primary manufacturer and distributor of glyphosate and glyphosate-based herbicides, the Monsanto Company, as a significant source of the information on which he based his review in 2000. In my opinion, this utilization of information from a source with a significant stake in Dr. William's conclusions is problematic, at best. In addition, Dr. Williams apparently did not conduct any independent research to support the opinions in his review.

In this report, I have included below numerous studies, which confirm that glyphosate and/or glyphosate-based herbicides have been found by numerous experimental researchers to be mutagenic and genotoxic in a wide variety of animal species.³⁵ In addition, I have cited a growing body of epidemiologic literature that has identified G and GBH as causative factors in NHL, HCL, and MM.³⁶ Finally, I disagree with Dr. Williams' contention that there is no available evidence that G and GBH are carcinogenic.

Seymour Grufferman, M.D.

Dr. Grufferman relies in part on outdated and incorrect EPA and WHO determinations that glyphosate is not carcinogenic. The assertion is not "a conclusion that is fully supported by the epidemiologic evidence."³⁷ In addition, Dr. Grufferman's claim that medical monitoring of those exposed to GBH aerial spraying, including the plaintiffs, would not change the medical care nor the disease outcomes of these exposed bystanders. It is clear from the plaintiffs' histories of extreme poverty and lack of reasonable access to medical care (as well as their historical accounts of seeking care mainly for the most serious signs and symptoms of illness) that routine healthcare, which we in the United States expect, is not available to the plaintiffs.

In the plaintiffs' area of Ecuador, primary prevention of disease involving asymptomatic individuals (e.g. routine examinations and medical advice) is relatively unavailable. Secondary prevention, the identification and treatment of asymptomatic patients with risk factors (such as unmonitored toxic exposures) or preclinical disease without a clinically apparent condition, is also relatively unavailable to the plaintiffs. Tertiary prevention (e.g., treatment to prevent complications of diabetes or treatment of an infection in an individual with previously undiagnosed leukemia) is an unacceptable alternative if earlier intervention is available.³⁸

My prior recommendation for medical monitoring for this group of plaintiffs would consist of the type of yearly routine preventive care (including routine laboratory tests, such as a CBC and comprehensive chemistry and metabolic laboratory panels), to which a large proportion of Americans have access. Such a medical regime is not "part of routine health maintenance for well adults or children" in Ecuador, where the plaintiffs reside. Care from a physician on a routine basis, with availability of followup, is clearly not affordable for the plaintiffs.

³⁵ De Roos; etc.

³⁶ De Roos, 2005; Eriksson, 2008; Hardell 1999 and 2002; etc.

³⁷ Grufferman report, page 6; De Roos, 2005; Eriksson, 2008; Hardell 1999 and 2002; Paz-y-Mino; etc.

³⁸ Fisher, 1989

Dr. Grufferman is correct in his opinion that we presently have no reliable screening test for NHL, HCL or MM. However, the routine care that I have described above, currently inaccessible to and unaffordable for the plaintiffs may result in earlier diagnosis and improvement in quality of life, if not prolonged survival, in those who develop cancers or other medical conditions as a result of their GBH exposures. Based on their poverty and limited access to medical care, it is unlikely that even the early symptoms of NHL, HCL or MM³⁹ would lead all plaintiffs to seek prompt medical attention.

In his report, Dr. Grufferman provides an interesting overview of his knowledge of epidemiology. However, in offering his perspective on Sir Austin Bradford Hill's article on association or causation regarding disease and the environment,⁴⁰ Dr. Grufferman makes the common error of referring to Dr. Hill's guidelines for determining causation as criteria. Hill offers his nine guidelines (listed by Dr. Grufferman) as aspects of the association between two variables to consider in deciding whether the association is causative. Without going into detail, I would point out that Dr. Hill advises that neither the lack of adherence to one of his guidelines nor the even the lack of adherence to several of them is a bar to the ability to conclude causation. In the case of the plaintiffs, the guidelines of strength of association, consistency of association, a biologic gradient, biologic plausibility, coherence of an association, and supporting experimental evidence are exhibited in the experimental and epidemiologic literature regarding the causative link between GBH exposures and mutagenicity, genotoxicity, and carcinogenicity.⁴¹

Finally, Dr. Grufferman's reliance on outdated determinations of the lack of carcinogenicity of glyphosate-based herbicides by EPA and WHO fails to support his opinion that these herbicides are not carcinogens. In addition, he apparently does not recognize that EPA standards are not based on the best available scientific knowledge but on political decisions.

Future Medical Care/Medical Monitoring

As discussed in my December 2010 report, the plaintiffs in this case, are likely, within a reasonable degree of medical certainty, to be at increased risk for significant adverse health effects in the future due to their exposures to GBH. Those individuals who have already experienced and/or been diagnosed with exposure-related medical conditions or diseases which have persisted, as well as those who will develop exposure-related conditions/diseases in the future, will need medical care for these conditions/diseases.

A surveillance regime for the early detection of disease associated with the exposures of concern is comprised of several components. First, exposed individuals should undergo a yearly history/physical examination by a physician, including a detailed interval history. Second, exposed individuals should undergo a variety of clinical tests to identify laboratory and/or functional abnormalities, which may result from their toxic exposures. Monitoring of children

³⁹ Grufferman report, page 30

⁴⁰ Hill, 1965

⁴¹ De Roos, 2005; Eriksson, 2008; Hardell 1999 and 2002; Paz-y-Miño; etc.

may require a different schedule from that for adults, dependent on the child's age and stage of development.

The medical surveillance regime described above is not part of routine health maintenance for well adults or children in the plaintiffs' region of Ecuador. However, individuals with known past or ongoing toxic exposures, or those in a known exposure area, require ongoing regular medical care in order to detect suspected or undiagnosed disease.

In summary, the exposed plaintiffs in this case are at increased risk for significant adverse health effects in the future. Those individuals with already diagnosed exposure-related medical conditions may need comprehensive medical care for the remainder of their lives. A medical monitoring program allows for the early detection of disease. This monitoring regime is considerably different from that available to healthy Ecuadorian adults or children in the exposure areas. Finally, a monitoring regime is necessary and indicated for an exposed of groups of individuals such as these plaintiffs, within a reasonable degree of medical certainty.



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February 11, 2011

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