

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

VENANCIO AGUASANTA ARIAS,)	
<u>et al.</u> ,)	
)	
Plaintiffs,)	
)	Civil Action No. 01-1908 (RWR)
v.)	
)	Consolidated with Civil Action
DYNCORP, <u>et al.</u> ,)	No. 07-1042 (RWR) for case
)	management and discovery
Defendants.)	purposes
)	
)	UNDER SEAL
)	

MEMORANDUM OPINION

Plaintiffs, approximately 2,000 Ecuadorian citizens and domiciliaries, bring common law negligence and other tort claims against the DynCorp defendants, alleging acute and chronic personal injuries caused by the defendants spraying herbicides over the plaintiffs' lands in Ecuador.¹ The defendants have filed a motion under Federal Rule of Evidence 702 to exclude the testimony of the plaintiffs' proffered expert witness, Dr. Michael A. Wolfson. Because the plaintiffs failed to establish the reliability of Dr. Wolfson's expert opinions regarding the proper mixture and application rate of the Plan Colombia herbicide and plaintiffs' future need for medical monitoring, or his qualifications to render those opinions, or

¹ The plaintiffs also claim that the fumigant caused property damage, but the plaintiffs' claims regarding injury to their farms, livestock, and fish were dismissed in an earlier order. See Mem. Op. entered Feb. 7, 2013 at 11.

the reliability of his opinions regarding general causation of the plaintiffs' acute and chronic injuries and specific causation of the plaintiffs' chronic injuries, but the plaintiffs met their burden regarding Dr. Wolfson's opinion of the specific causation of the plaintiffs' acute injuries, the defendants' motion to exclude Dr. Wolfson's testimony will be granted in part and denied in part. The defendants also move for summary judgment arguing that without Dr. Wolfson's expert testimony, the plaintiffs cannot show that exposure to the Plan Colombia herbicide caused their injuries. Because Dr. Wolfson's general causation opinion regarding the plaintiffs' acute injuries and his general and specific causation opinions regarding the plaintiffs' chronic injuries are inadmissible, the defendants are entitled to judgment as a matter of law.

BACKGROUND

The Department of State ("DOS") hired the defendants to help eradicate Colombian cocaine and heroin poppy plantations. Arias v. DynCorp, 856 F. Supp. 2d 46, 49 (D.D.C. 2012). To carry out the mission, which was known as "Plan Colombia," the defendants' planes sprayed aerial fumigants over Colombian drug farms. The fumigant was a glyphosate-based herbicide. Am. Compl. ¶ 35. "Commercial versions of the herbicide have been sold under the trade name Roundup®." Id. However, the planes' fumigants allegedly also drifted onto the plaintiffs' lands in Ecuador,

harming "humans, animals, and plants other than cocaine and opium poppies[.]" Arias, 856 F. Supp. 2d at 49 (internal citation and quotation marks omitted). These fumigations are alleged to have severely damaged the plaintiffs and their property and, as a result, forced those residing in the affected areas to flee. Id. The test plaintiffs reported several acute injuries including "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." Pls.' Opp'n to DynCorp's Mot. to Exclude the Opinions of Pls.' Expert Dr. Michael Wolfson & Associated Mot. for Summ. J. ("Pls.' Opp'n"), Ex. 1 (Michael A. Wolfson Expert Rpt. ("Wolfson Rpt.") at 3). The plaintiffs now bring common law tort claims and claims under the Alien Tort Claims Act against the defendants, all arising from injuries the fumigants allegedly caused.

The plaintiffs proffer as an expert Dr. Michael A. Wolfson to offer opinion testimony in several areas. First, he would state that the DynCorp defendants applied the Plan Colombia herbicide in a manner contrary to the directions on the Roundup label. Second, Dr. Wolfson would offer testimony linking general and specific causation of the plaintiffs' acute personal injuries to their alleged exposure to the Plan Colombia herbicide. See Pls.' Opp'n at 2. Third, Dr. Wolfson would opine that as a

result of the plaintiffs' exposure to the Plan Colombia herbicide, the plaintiffs have an increased risk of developing several cancers, including non-Hodgkin's lymphoma, hairy cell leukemia, and multiple myeloma. Wolfson Rpt. at 3. Given the plaintiffs' risk of future adverse health effects, Dr. Wolfson would also testify that the plaintiffs should be provided with medical monitoring for early detection of cancer. Id. at 4.

Dr. Wolfson received his Masters of Science in Pharmacology from Northeastern University and holds a medical degree from State University of New York Upstate Medical Center and a Masters of Public Health from Harvard School of Public Health. Wolfson Rpt., Ex. A. at 1. Dr. Wolfson is "Fellowship-trained and Board Certified in Occupational Medicine (1995) with clinical training in occupational and environmental medicine," and has "engaged in the practice of Occupational and Environmental Medicine for over twenty-two years[.]" Wolfson Rpt. at 1. His clinical practice has included "environmental and occupational risk assessment and toxic exposure evaluations, diagnoses, treatment, and referrals." Id. at 2. Currently, Dr. Wolfson is the Medical Director of Syracuse Occupational and Environmental Medicine Consultants. Id. Although not a toxicologist or epidemiologist, DynCorp Defs.' Mot. to Exclude the Test. of Pls.' Sole Expert Witness, Dr. Michael Wolfson & Associated Mot. for Summ. J. ("Defs.' Mot."), Defs.' App. ("Defs.' App.") (Michael A. Wolfson Dep.

("Wolfson Dep.") at 9:5-6, 9:15-16), Dr. Wolfson has "rendered thousands of diagnoses and opinions on the causation of disease involving complex issues of toxic exposures[,] " Wolfson Rpt. at 2.

The DynCorp defendants move to exclude Dr. Wolfson's expert testimony. The defendants argue that Dr. Wolfson is not qualified to offer his three opinions and that his opinions are unreliable. Defs.' Mot. at 1-3. The defendants further move for summary judgment arguing that in a toxic tort case, expert testimony is necessary to prove causation. They argue that if Dr. Wolfson's testimony is excluded, the defendants are entitled to judgment as a matter of law.

DISCUSSION

I. MOTION TO EXCLUDE DR. WOLFSON'S EXPERT TESTIMONY

Federal Rule of Evidence 702 provides:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702.

Under Rule 702, district courts are gatekeepers of expert evidence. See Daubert v. Merrell Dow Pharm., Inc. 509 U.S. 579,

589 (1993). The trial judge must determine as an initial matter whether the proffered witness is qualified to give the expert opinion he seeks to express. See Kumho Tire Co. v. Carmichael, 526 U.S. 137, 156 (1999); Daubert, 509 U.S. at 589. To do so, the court must assess whether the proffered expert has "sufficient specialized knowledge to assist the jurors in deciding the particular issues in this case." Kumho, 526 U.S. at 156 (internal quotation marks omitted). Although "a person who holds a graduate degree typically qualifies as an expert in his or her field," formal education in the subject or field is not a prerequisite to testify as an expert. Khairkhwa v. Obama, 793 F. Supp. 2d 1, 11 (D.D.C. 2011); see also Fed. R. Evid. 702 (stating that an expert may be qualified by "knowledge, skill, experience, training, or education" (emphasis added)). A proffered witness who does not hold a specific academic degree may be qualified as an expert if he has some degree of specialized knowledge regarding the subject or a similar topic. See Dyson v. Winfield, 113 F. Supp. 2d 44, 50 (D.D.C. 2000) ("[T]he key to qualifying him as an expert is his knowledge, not his academic degree."); see also Exum v. Gen. Elec. Co., 819 F.2d 1158, 1163-64 (D.C. Cir. 1987). A witness may also be qualified as an expert based on his experience. "If the witness is relying solely or primarily on experience, then the witness must explain how that experience leads to the conclusion reached, why that experience

is a sufficient basis for the opinion, and how that experience is reliably applied to the facts." Fed. R. Evid. 702 advisory committee's note; cf. DL v. District of Columbia, 730 F. Supp. 2d 78, 81 (D.D.C. 2010) (holding that a proffered witness was not qualified as an expert based on his experience where the proponent "cited sparse evidence of his experience" and the expert "[conclusorily] stated that he ha[d] 35 years [of] experience, without further explanation of what that experience entail[ed]").

Rule 702 also places an obligation on the court to "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." Daubert, 509 U.S. at 589. Evidence is relevant if it will "'assist the trier of fact to understand the evidence or determine a fact in issue.'" Id. at 591 (quoting Fed. R. Evid. 702).²

² Dr. Wolfson's testimony is relevant to at least the plaintiffs' negligence and medical monitoring claims. A plaintiff bringing a negligence action under District of Columbia law must show: "(1) that the defendant owed a duty to the plaintiff, (2) breach of that duty, and (3) injury to the plaintiff that was proximately caused by the breach." Hedgepeth v. Whitman Walker Clinic, 22 A.3d 789, 793 (D.C. 2011). To be successful, a plaintiff asserting a cause of action for medical monitoring must prove the essential elements of a claim for medical monitoring.

The elements of a claim for medical monitoring are (1) plaintiff was significantly exposed to a proven hazardous substance through the negligent acts of the defendant; (2) as a proximate result of that exposure, plaintiff suffers a significantly increased risk of contracting a serious latent disease; (3) that increased risk makes periodic medical examinations reasonably necessary; and (4) monitoring and testing procedures exist which make the early detection and

Scientific testimony is reliable when it pertains to scientific knowledge. Id. at 589-90. Determining whether the testimony pertains to scientific knowledge

forces the court to focus on "principles and methodology, not on the conclusions that they generate," [Daubert, 509 U.S.] at 595, and thus demands a grounding in the methods and procedures of science, rather than subjective belief or unsupported speculation. Id. at 590; Ambrosini v. Labarrague, 101 F.3d 129, 133 (D.C. Cir. 1996).

Meister v. Med. Eng'g Corp., 267 F.3d 1123, 1127 (D.C. Cir. 2001). Accordingly, scientific knowledge requires that the "inference or assertion must be derived by the scientific method." Daubert, 509 U.S. at 590. That is, the "[p]roposed testimony must be supported by appropriate validation -- i.e., 'good grounds,' based on what is known." Id. In determining whether the grounds supporting the expert testimony are scientifically valid, courts may consider "whether the theory or technique had been tested, whether it had been subjected to peer review and publication, the method's known or potential error rate, and the method's general acceptance in the scientific

treatment of the disease possible and beneficial. Reed v. Philip Morris Inc., No. 96-5070, 1997 WL 538921, at *16 n.10 (D.C. Super. Aug. 18, 1997) (internal quotation marks omitted). Dr. Wolfson's testimony that the defendants did not follow the directions on the Roundup label and his causation opinions are relevant to the plaintiffs' negligence claims -- the breach of duty and causation elements, respectively. Dr. Wolfson's causation testimony is also relevant to the plaintiffs' medical monitoring claims as is his medical monitoring opinion.

community." Meister, 267 F.3d at 1127 (citing Daubert, 509 U.S. at 593-94).

"In general, Rule 702 has been interpreted to favor admissibility." Khairkhwa, 793 F. Supp. 2d at 10 (citing Daubert, 509 U.S. at 587; Fed. R. Evid. 702 Advisory Committee's note ("A review of the caselaw after Daubert shows that the rejection of expert testimony is the exception rather than the rule.")). Nonetheless, the proponents of the evidence -- here, the plaintiffs -- bear the burden to prove that the expert testimony is reliable by a preponderance of the evidence. Meister, 267 F.3d at 1127 n.9.

A. Expert testimony on proper mixture and aerial application rate of Plan Colombia herbicide

The plaintiffs assert that Dr. Wolfson is qualified to offer an expert opinion that the Plan Colombia herbicide contained "excessive concentrations of glyphosate and surfactant[,]" Wolfson Rpt. at 3; Pls.' Opp'n, Ex. 2 (Michael A. Wolfson Rebuttal Rpt. ("Wolfson Rebuttal Rpt.") at 7), because he is a physician and a specialist in occupational and environmental medicine, Pls.' Opp'n at 5. Although Dr. Wolfson has impressive credentials, the plaintiffs have not demonstrated how his academic and professional experiences make him qualified to testify as to the proper concentration of glyphosate and surfactant in the Plan Colombia herbicide and application rate of the herbicide. Dr. Wolfson's expert report states that he has

graduate degrees in pharmacology and public health and a medical degree. Wolfson Rpt., Ex. A at 1. The plaintiffs in their opposition simply recite Dr. Wolfson's degrees. Pls.' Opp'n at 5. But nothing the plaintiffs provide reflects that Dr. Wolfson's education was related to herbicides, weed biology or eradication, glyphosate, or a related field.

As to whether Dr. Wolfson's experience makes him qualified, the plaintiffs have not demonstrated that Dr. Wolfson's experience is a "sufficient basis" for his expert opinion.³ In his expert report, Dr. Wolfson states that he is qualified to offer expert opinion testimony in this case because of his "extensive training and expertise in occupational and environmental medicine," which includes residency training and clinical practice. Wolfson Rpt. at 2. However, the plaintiffs do not show why Dr. Wolfson's residency training and clinical practice is a sufficient basis for his opinion, or whether Dr. Wolfson's "preparation is of a kind that others in the field would recognize as acceptable[,]" Kumho, 526 U.S. at 151, or how Dr. Wolfson's experience supports his conclusion that the Plan Colombia herbicide contained excessive concentrations of

³ If the plaintiffs rely upon Dr. Wolfson's experiences to qualify him to testify on the proper mixture of the Plan Colombia herbicide, Dr. Wolfson's deposition raises serious doubts as to the scope of Dr. Wolfson's knowledge gained from his experiences. See, e.g., Wolfson Dep. at 49:20-23 (testifying that he does not "have any knowledge one way or the other whether surfactants are routinely added to Roundup ULTRA").

glyphosate and surfactant. Thus, the plaintiffs have failed to carry their burden to establish that Dr. Wolfson is qualified to offer expert testimony on whether the Plan Colombia herbicide contained an excessive concentration of glyphosate and surfactant or was applied at an excessive rate.

Moreover, the way that Dr. Wolfson concluded that the Plan Colombia herbicide contained excessive concentrations of glyphosate and surfactant and was applied at an excessive rate makes his expert opinion testimony improper and inadmissible. Dr. Wolfson's opinion that the Plan Colombia herbicide contained excessive concentrations of glyphosate and surfactant is based on a comparison of the Plan Colombia herbicide composition and application rate with the manufacturer's recommended concentrations and application directions on the Roundup Ultra label. The composition and application rate of the Plan Colombia herbicide is undisputed.⁴ Thus, Dr. Wolfson used the simple methodology of comparing excerpts from the manufacturer's label

⁴ The Plan Colombia herbicide was composed of 44% Roundup Ultra ("commercial glyphosate formulation"), 1% Cosmo-Flux 411F (a surfactant), and 55% water. The Roundup Ultra was composed of 41% glyphosate, 15% surfactant (polyoxyethylene alkylamine ("POEA")), and 44% water. See Chemicals Used for the Aerial Eradication of Illicit Coca in Colombia and Conditions of Application, U.S. Dep't of State (2002), <http://www.state.gov/j/inl/rls/rpt/aeicc/13234.htm> ("DOS Spray Report"); Letter from Stephen L. Johnson, Assistant Adm'r, EPA, to Colin L. Powell, Secretary, U.S. Dep't of State (Aug. 19, 2002), available at <http://www.state.gov/j/inl/rls/rpt/aeicc/13237.htm>. The Plan Colombia herbicide was applied "to coca at the rate of 2.53 gallons per acre." DOS Spray Report.

against the quantities and application rates of the Plan Colombia herbicide. However, offering this expert testimony is not proper because "the jury is just as competent to consider and weigh [this] evidence as is an expert witness and just as well qualified to draw the necessary conclusions therefrom[.]'" Evans v. Wash. Metro. Area Transit Auth., 674 F. Supp. 2d 175, 179-80 (D.D.C. 2009) (quoting Henkel v. Varner, 138 F.2d 934, 935 (D.C. Cir. 1943)). Since his conclusion is not based upon specialized knowledge that would "help the trier of fact to understand the evidence or determine a fact in issue," Fed. R. Evid. 702, Dr. Wolfson's opinion would not be admissible.

There are also at least two factors undermining the reliability of Dr. Wolfson's proposed testimony. First, Dr. Wolfson admits that the Roundup Ultra label provided the sole basis for his opinion that the concentration of glyphosate and surfactant in the Plan Colombia herbicide and its application rate was excessive. Wolfson Dep. at 71:22-72:20, 78:23-79:8. However, Dr. Wolfson did not use all of the relevant information on the label in reaching his conclusion. Instead, he based his opinion on incomplete excerpts from the label. For example, Dr. Wolfson would testify that the application rate of the glyphosate based herbicide used in the Plan Colombia spraying was excessive based on the Roundup Ultra label which, according to Dr. Wolfson, states that Roundup Ultra use should not exceed 1

quart per acre although, in exceptional circumstances, 1.5 quarts may be used. Wolfson Rebuttal Rpt. at 7-8. Because the Plan Colombia spraying applied 4.45 quarts of Roundup Ultra per acre, Dr. Wolfson concludes that 3 to 4.5 times the recommended amount of glyphosate was applied through the Plan Colombia aerial spraying. Id. at 8. However, Dr. Wolfson bases his conclusion on an excerpt of the label and, without explanation, ignores the surrounding sections of the label. The full label states, in relevant part: "Unless otherwise specified, do not exceed 1 quart of [Roundup Ultra] per acre. . . . Refer to the individual use area sections of this label for recommended volumes, application rates and further instructions." Pls.' Opp'n to DynCorp's Mot. for Summ. J. Based on Lack of Necessary Expert Test., Ex. 4 (Michael Wolfson Expert Rebuttal Rpt., Ex. A at 2). In his deposition, Dr. Wolfson implied that he referred to the individual use area sections of the label and "found what [he] believe[d] to be the maximum concentration recommended anywhere on the label[.]" Wolfson Dep. at 58:11-17. But he admitted that the label "is so complex and detailed" that he may have missed the appropriate section listing the maximum concentration of Roundup Ultra that may be used in the Plan Colombia context. Id. The defendants presented evidence that Dr. Wolfson indeed did miss the appropriate section. They offer expert testimony by Dr. Joseph M. DiTomaso that the appropriate individual use area

section on the label for woody plants, such as coca, provides that Roundup Ultra should be applied at a rate of 2 to 5 quarts per acre. Defs.' App. (Joseph M. DiTomaso Expert Rpt. ("DiTomaso Rpt.)) at 203. Confronted with Dr. DiTomaso's expert opinion, Dr. Wolfson stated that he had "no basis . . . on which . . . to provide an opinion at all based on [the Roundup Ultra] label" about whether the correct application rate for Roundup when used for woody brush and trees is 2 to 5 quarts per acre. Wolfson Dep. at 65:3-8.

Second, Dr. Wolfson again relies on the Roundup Ultra label for his opinion that the Plan Colombia herbicide contains excessive amounts of surfactant. The Roundup Ultra label states that surfactant should not be added to a spray solution when Roundup Ultra herbicide is the only pesticide used. Wolfson Rpt. at 3. Dr. Wolfson reasoned that because "[t]he coca spray mixture apparently contains Roundup Ultra as the only pesticide/herbicide in the solution[,] "the coca spray mixture used by Plan Colombia, fails to follow [the] manufacturer's label directions for the use of [Roundup Ultra]" since it added the surfactant Cosmo-Flux 411F. Id. But Dr. Wolfson admitted that he had not explored the significance of the instruction and did not know whether the statement regarding adding surfactant was required by the Environmental Protection Agency for safe use or was optional. Wolfson Dep. at 50:7-10. Moreover, Dr. Wolfson

could not say whether Dr. DiTomaso was correct that the instruction was included on the label for business reasons rather than reasons of safety. Id. at 50:11-18; see also DiTomaso Rpt. at 202 (stating that "manufacturers often include statements [such as those regarding adding surfactant to Roundup Ultra] in the product labeling . . . to remind the user that Roundup formulations already include a surfactant and to suggest (subtly or not) that it is unnecessary to purchase additional surfactants and additives (from other chemical manufacturers) to effectively control weeds and other undesired plants"). Dr. Wolfson also conceded that he did not know whether, despite the label, surfactants are routinely added to Roundup Ultra. Wolfson Dep. at 49:20-23. Thus, Dr. Wolfson's testimony is based not on scientific knowledge but on subjective belief and unsupported speculation that the directions he cited from the manufacturer's label are requirements for safe use of Roundup Ultra and should have been followed by the defendants in the Plan Colombia operation. The plaintiffs, then, have not demonstrated that Dr. Wolfson's testimony regarding the excessive concentration of surfactant in the Plan Colombia herbicide would be reliable.

B. Expert testimony on causation

1. Expert qualifications

The defendants assert that "[s]imply having a medical degree or training is insufficient expertise to establish

causation.'" Defs.' Mot. at 9 (quoting Cunningham v. Masterwear, Inc., No. 1:04-cv-1616-JDT-WTL, 2007 WL 1164832, at *10 (S.D. Ind. Apr. 19, 2007)). They continue that Dr. Wolfson is not qualified as an expert to testify as to specific or general causation because "he is not an expert in epidemiology or toxicology, the two fields of expertise relevant to the question whether the Plan Colombia herbicide could cause the test plaintiffs' alleged acute injuries or alleged increased risk of cancer." Id. at 9. The plaintiffs counter that being a toxicologist or epidemiologist is not required to be qualified to offer expert testimony on causation and Dr. Wolfson's experience qualifies him as an expert. Pls.' Opp'n at 6.

Although the D.C. Circuit has not spoken on the qualifications necessary to offer expert testimony in a toxic tort case, cases in other districts provide guidance. In Cunningham v. Masterwear, Inc., the defendant moved to strike expert witnesses' testimony and reports regarding causation in a toxic tort case. The plaintiffs claimed that perchloroethylene ("PCE") exposure over the course of more than fifteen years caused them to develop "chronic respiratory ailments and headaches." 2007 WL 1164832, at *1. The plaintiffs' experts sought to testify that the PCE had caused the plaintiffs' injuries. See id. at *9. The court explained that one of the putative experts had experience only diagnosing and treating the

underlying ailments. Id. at *10. As such, the court concluded that the witnesses were not qualified to "assess [the] genesis" of the plaintiffs' ailments. Id. (internal quotation marks omitted). The court did, however, leave open the possibility that a different physician with more experience may be able to testify as to causation. Id. at *11 ("[I]n this entry the court is not assuming that no physician can ever testify as to general causation; rather, it is assuming only that not every doctor by virtue of having a medical degree may testify as to general causation in every case.").

In Morin v. United States, 534 F. Supp. 2d 1179 (D. Nev. 2005), the plaintiff alleged that regular exposure to jet fuel from a military air station caused her to develop a malignant brain tumor. Id. at 1181. The plaintiff's only proffered expert to testify as to causation was a practicing physician who regularly diagnosed and treated patients with cancer. Id. at 1185. As in Cunningham, the court in Morin distinguished between the expert's experience diagnosing and treating the underlying ailment and his experience determining the cause of the ailment, and held that the licensed oncologist was not qualified to testify as to the causal link between jet fuel and brain tumors because he had "no expertise in toxicology, epidemiology, risk-assessment, or environmental medicine." Id. The guidance that emerges from these cases is that an expert is qualified to

testify as to causation in a toxic tort case when he has expertise to "assess [a disease's] genesis to a reasonable degree of scientific certainty." Sutera v. Perrier Grp. of Am. Inc., 986 F. Supp. 655, 667 (D. Mass. 1997).

This guidance mirrors approaches used in this district. For example, the court in Dyson considered whether a witness who was not a physician could offer expert testimony that a drug given to a pregnant patient had caused birth defects. 113 F. Supp. 2d at 50. As happened in Cunningham and Morin, the court looked past the witness's professional title and formal education and considered whether the proffered expert had experience identifying the effect of chemical exposure during pregnancy. Id.

In his expert report, Dr. Wolfson describes his lengthy career in occupational and environmental medicine. Dr. Wolfson also states that he has "rendered thousands of diagnoses and opinions on the causation of disease involving complex issues of toxic exposures" and, through his clinical practice, conducted "environmental and occupational risk assessment and toxic exposure evaluations[.]" Wolfson Rpt. at 1-2. Dr. Wolfson's resume supports his statements. Thus, although Dr. Wolfson does not have any formal education in epidemiology or toxicology, his expert report supports a finding that he has vast experience in environmental medicine, conducting risk assessments, and

assessing the genesis of diseases caused by toxins. As such, the plaintiffs have made an ample showing of Dr. Wolfson's qualifications as an expert to offer causation testimony.

2. Reliability

In a toxic tort case, general causation requires that the plaintiff "show that the toxicant in question is capable of causing the injury complained of[.]" Young v. Burton, 567 F. Supp. 2d 121, 138 (D.D.C. 2008) (internal quotation marks omitted). Specific causation requires that the plaintiff "prove that the toxicant in fact did cause that injury in the present case[.]" Id. Dr. Wolfson proposes to testify that the Plan Colombia herbicide can and did cause the plaintiffs' acute injuries. He would also testify that exposure to glyphosate and glyphosate-based herbicides as a result of aerial spraying can cause certain chronic injuries, and very likely placed the plaintiffs at significant risk for the development of cancers in the future. Wolfson Rpt. at 3.

In toxic tort cases, there are two common methods experts apply to draw causation conclusions. First, an expert may rely on "a temporal relationship between exposure to the toxin and subsequent adverse health effects" to establish both general and specific causation. See Young, 567 F. Supp. 2d at 128. In compelling circumstances, a temporal relationship between exposure to a toxin and a plaintiff's injury alone is sufficient

to establish general causation. See Cavallo v. Star Enterprise, 892 F. Supp. 756, 773-74 (E.D. Va. 1995), aff'd in relevant part, rev'd in part, 100 F.3d 1150 (4th Cir. 1996). For example, a temporal relationship may be "so compelling as to dispense with the need for reliance on standard methods of toxicology" where a person is exposed to a large amount of chemical X and "immediately thereafter developed symptom Y[.]" Id. Also, if a chemical is introduced into an environment and all of the people "exposed immediately develop the same adverse reaction, then the episode itself may be sufficiently indicative of causation." Id. However, "[i]n the absence of an established scientific connection between exposure and illness, or compelling circumstances . . . , the temporal connection between exposure to chemicals and an onset of symptoms, standing alone, is entitled to little weight in determining causation." Moore v. Ashland Chem. Inc., 151 F.3d 269, 278 (5th Cir. 1998); see also Young, 567 F. Supp. 2d at 128. This is because "[d]rawing such a conclusion from temporal relationships leads to the blunder of the *post hoc ergo propter hoc* fallacy."⁵ McClain v. Metabolife

⁵ "The *post hoc ergo propter hoc* fallacy assumes causality from temporal sequence. It literally means 'after this, because of this.' Black's Law Dictionary 1186 (7th ed. 1999). It is called a fallacy because it makes an assumption based on the false inference that a temporal relationship proves a causal relationship." McClain v. Metabolife Int'l, Inc., 401 F.3d 1233, 1243 (11th Cir. 2005).