

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

Hartle et al.,

Plaintiffs,

v.

Civil Action No. 08-1019

FirstEnergy Generation Corp.,

Defendant.

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Patrick et al.,

Plaintiffs,

v.

Civil Action No. 08-1025

FirstEnergy Generation Corp.,

Defendant.

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Price et al.,

Plaintiffs,

v.

Civil Action No. 08-1030

FirstEnergy Generation Corp.,

Defendant.

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**MEMORANDUM OPINION**

CONTI, Chief District Judge

**I. Introduction**

Before the court are expert challenges in three cases consolidated for discovery, *Hartle v. FirstEnergy Generation Corp.* (No. 08-1019), *Patrick v. FirstEnergy Generation Corp.* (No. 08-1025), and *Price v. FirstEnergy Generation Corp.* (No. 08-1030). These cases involve the Bruce Mansfield Power Plant (“Bruce Mansfield”), a coal-fired electric generating facility located along the Ohio River in Shippingport, Pennsylvania. Bruce Mansfield is owned and operated by defendant FirstEnergy Generation Corporation (“FirstEnergy” or “defendant”). The plaintiffs allege harm from air pollution discharged by Bruce Mansfield. The alleged pollution came in the form of “white rain,” a chronically discharged corrosive material, and “black rain,” a

dark-colored sooty residue discharged on two occasions in 2006 and 2007. The white rain and black rain were deposited on the area surrounding Bruce Mansfield, allegedly causing property damage and adverse health effects. The plaintiffs in *Hartle* are two parents seeking damages for adverse health effects sustained by their minor daughter. The named plaintiffs in *Patrick* are four couples who make class-action claims for damages due to diminution of property value and seek to enjoin the plant from operating until it can prevent the white rain emissions. In *Price*, nineteen plaintiffs seek monetary damages for adverse health effects and property damage and seek injunctive relief.

The parties conducted extensive fact and expert discovery in these cases. Defendant filed motions to limit or preclude the testimony of twelve of plaintiffs' experts. Plaintiffs filed motions to limit or preclude the testimony of seven of defendant's experts. This memorandum opinion addresses defendant's motions to exclude the expert testimony of Gary Brown ("Brown") and plaintiffs' motions to limit the testimony of James Nairn ("Nairn").<sup>1</sup> The motions are fully briefed, and the court heard argument on February 4, 2014.

## **II. Legal Standards**

Federal Rule of Evidence 702 governs the admissibility of expert testimony and states:

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:

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1 The motions to exclude the testimony of Brown are ECF No. 128 (*Hartle*), ECF No. 166 (*Patrick*), and ECF No. 105 (*Price*). The instant opinion is limited to the Brown's opinions with respect to materials sampling. Brown also offered opinions about air pollution regulations. The court granted in part and denied in part the motions to exclude Brown's regulatory opinions. (See ECF No. 283.) The motions to limit the testimony of Nairn are ECF No. 116 (*Hartle*), ECF No. 204 (*Patrick*), and ECF No. 95 (*Price*). Unless otherwise noted, ECF numbers appearing in the text of this opinion refer to the *Patrick* case, No. 08-1025.

- (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 the seminal case of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), district courts must act as gatekeepers to “ensure that any and all scientific testimony or evidence admitted is ... reliable.”<sup>2</sup> *Id.* at 589. The United States Court of Appeals for the Third Circuit explained that Rule 702 “embodies a trilogy of restrictions” that expert testimony must meet for admissibility: qualification, reliability and fit. *Schneider ex rel. Estate of Schneider v. Fried*, 320 F.3d 396, 404 (3d Cir. 2003). The party offering the expert testimony has the burden of establishing each of these requirements by a preponderance of the evidence. *In re TMI Litig.*, 193 F.3d 613, 663 (3d Cir. 1999).

#### **A. Qualification**

An expert witness’s qualification stems from his or her “knowledge, skill, experience, training, or education.” FED. R. EVID. 702. The witness therefore must have “specialized expertise.” *Schneider*, 320 F.3d at 404. The court of appeals interprets the qualification requirement “‘liberally,’ holding that ‘a broad range of knowledge, skills, and training qualify an expert as such.’” *Calhoun v. Yamaha Motor Corp., U.S.A.*, 350 F.3d 316, 321 (3d Cir. 2003) (quoting *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 741 (3d Cir. 1994)). When evaluating an expert’s qualifications, district courts should not insist on a certain kind of degree or background. *Robinson*

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2 While *Daubert* applied exclusively to scientific testimony, see *Daubert*, 509 U.S. at 590 n.8, the Supreme Court subsequently extended the district court’s gatekeeper function to all expert testimony. *Kuhmo Tire Co. v. Carmichael*, 526 U.S. 137, 147 (1999).

*v. Hartzell Propeller Inc.*, 326 F. Supp. 2d 631, 667 (E.D. Pa. 2004). An expert's qualifications are determined with respect to each matter addressed in the proposed testimony. *Calhoun*, 350 F.3d at 322 ("An expert may be generally qualified but may lack qualifications to testify outside his area of expertise."). "While the background, education, and training may provide an expert with general knowledge to testify about general matters, more specific knowledge is required to support more specific opinions." *Id.*

### **B. Reliability**

In *Daubert*, the Supreme Court stated that the district court's gatekeeper role requires "a preliminary assessment of whether the reasoning or methodology underlying the testimony is ... valid and of whether the reasoning or methodology properly can be applied to the facts in issue." *Daubert*, 509 U.S. at 592-93. While the Court noted in *Daubert* that district courts were permitted to undertake a flexible inquiry into the admissibility of expert testimony under Rule 702, the court of appeals has enumerated the following eight factors that a district court may examine:

1. whether a method consists of a testable hypothesis;
2. whether the method has been subjected to peer review;
3. the known or potential rate of error;
4. the existence and maintenance of standards controlling the technique's operation;
5. whether the method is generally accepted;
6. the relationship of the technique to methods which have been established to be reliable;
7. the qualifications of the expert witness testifying based on the methodology; and
8. the non-judicial uses to which the method has been put.

*In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 742 n.8 (3d Cir. 1994) ("*Paoli II*"). This list of factors is a "convenient starting point," but is "neither exhaustive nor applicable in every case." *Kannankeril v. Terminix Int'l, Inc.*, 128 F.3d 802, 806-07 (3d Cir. 1997).

Under these factors, experts are not permitted to engage in a “haphazard, intuitive inquiry,” but must explain the research and methodology they employed in sufficient detail in order to allow the other party’s expert to test that hypothesis. *Oddi v. Ford Motor Co.*, 234 F.3d 136, 156 (3d Cir. 2000). Where an expert fails to use standards to control his or her analysis, “no ‘gatekeeper’ can assess the relationship of [the expert’s] method to other methods known to be reliable and the non-judicial uses to which it has been put.” *Id.* at 158.

“The evidentiary requirement of reliability is lower than the merits standard of correctness.” *Paoli II*, 35 F.3d at 744. “As long as an expert’s scientific testimony rests upon good grounds, based on what is known, it should be tested by the adversary process—competing expert testimony and active cross-examination—rather than excluded from jurors’ scrutiny for fear that they will not grasp its complexities or satisfactorily weigh its inadequacies.” *United States v. Mitchell*, 365 F.3d 215, 244 (3d Cir. 2004) (quoting *Ruiz-Troche v. Pepsi Cola of P.R. Bottling Co.*, 161 F.3d 77, 85 (1st Cir. 1998) (internal quotation marks omitted)).

### **C. Fit**

The Rule 702 requirement that testimony “help the trier of fact to understand the evidence or to determine a fact in issue” is called the “fit” requirement. Fit requires that there be a “connection between the scientific research or test result to be presented and particular disputed factual issues in the case.” *Paoli II*, 35 F.3d at 743 (quoting *United States v. Downing*, 753 F.2d 1224, 1237 (3d Cir. 1985)). “Fit’ is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes.” *Daubert*, 509 U.S. at 591. The standard for fit is “not that high,” although it is “higher than bare relevance.” *Paoli II*, 35 F.3d at 745.

### **III. Discussion**

#### ***A. Defendant's Motions to Preclude the Testimony of Brown***

Brown is an environmental engineer who prepared an expert report (“Brown Rep.”) dated August 6, 2012, and a supplemental expert report (“Brown Supp. Rep.”) dated December 3, 2012. Brown opined that FirstEnergy’s operations at Bruce Mansfield violated regulations governing coal-fired power plants. In a memorandum opinion (ECF No. 283) dated March 20, 2014, the court ruled that Brown could not offer a legal opinion that Bruce Mansfield had violated a regulation or acted negligently, and the court limited his testimony to providing relevant background about the statutes or regulations. Brown also opined that (1) arsenic found in soil samples from plaintiffs’ properties came from black rain, (2) residue on plaintiffs’ properties was from white rain, and (3) emissions from Bruce Mansfield constitute a health hazard and require further study and monitoring. The instant memorandum opinion addresses defendant’s challenges to these opinions. The court concludes that (1) the challenges to the opinion about soil contamination are a matter of weight, not admissibility; (2) Brown lacked a sufficient basis to opine about white rain residue; and (3) Brown is not qualified to opine about medical issues. The motions to preclude Brown’s expert testimony will be granted in part and denied in part.

##### *1. Reliability of Opinion About Soil Contamination Due to Black Rain*

Brown opined that soil contamination on plaintiffs’ properties was due to black rain emissions from Bruce Mansfield. (Brown Rep. 72, ECF No. 169-2.) This opinion was based in part on soil samples containing high levels of arsenic. (*Id.*) Brown attributed the soil contamination to black rain for three reasons: (1) air dispersion modeling showed sampling locations to be in the zone of impact of both black rain events; (2) after one of the black rain events, a horse in the affected area had a black tongue; and (3) soot-like material was observed on the property of some plaintiffs. (*Id.* at 39, ECF No. 169-1.)

Brown collected five soil samples from the property at 245 McCleary Road in Raccoon Township (the “Moore property”), which had received black rain from both the 2006 and 2007 events. (*Id.* at 56, ECF No. 169-2.) Analysis of these samples showed arsenic levels of 6.9, 13, 14, 63, and 110 mg/kg. (Brown Dep. 309:6–14, 313:2–8, Feb. 28, 2013, ECF No. 169-5.) Brown opined that the reason for the elevated level of arsenic in two of the samples was that they were collected next to a building that had been power washed after the black rain events. (Brown Supp. Rep. 12, ECF No. 169-18.) According to Brown, the concentration of metals in the soil would be “exacerbated by the washing.” (*Id.*) A soil sample containing 17 mg/kg arsenic was collected from 201 McCleary Road, Raccon Township (the “Kern property”). Brown testified that he collected this sample near a pool and deck that had been power washed. (Brown Dep. 502:55–506:21, Mar. 1, 2013, ECF No. 169-7.)

Defendant asserts that Brown made factual errors regarding the sampling locations and that these errors undermine the reliability of his opinions about arsenic. Brown acknowledged that the samples with high arsenic levels from the Moore property were actually taken in the middle of a field, not next to a building that had been power washed. (Brown Dep. 320:4–17, Feb. 28, 2013, ECF No. 169-5.) Defendant asserts that Brown also incorrectly recalled the location of the sample with 17 mg/kg arsenic from the Kern property. (ECF No. 167, at 4.) Defendant argues that “critical factual assumptions about the locations of the Moore and Kern samples with high arsenic levels are in error, and therefore [Brown’s] conclusions that are based on these faulty facts are unreliable.” (*Id.*) Since the samples were not taken near structures that had been power washed, defendant argues that soil amendments, pesticides, animal waste, and treated lumber are possible sources of the high levels of arsenic. (*Id.* at 3.) Defendant also argues that Brown’s conclusion is inconsistent with evidence collected from other properties that received black rain deposits and were power washed, but did not have elevated levels of arsenic. (*Id.* at 6.)

Plaintiffs argue that although the samples were not collected next to structures, they were collected from low-lying areas where the residue was likely to concentrate due to a combination of power washing and rain. (Hr'g Tr. 120:5–25, Feb. 4, 2014, ECF No. 277.) Plaintiffs argue that Brown's inability to remember the location of several samples during his deposition is a matter of weight and credibility and does not reveal a flawed methodology. (ECF No. 244, at 5 & n.3.) Likewise, plaintiffs argue, evidence of lack of arsenic at other properties affected by the black rain applies to the weight, not admissibility, of Brown's testimony. (*Id.* at 7, n.4.)

The court agrees that defendant's arguments are matters for the jury to consider and do not warrant exclusion of the testimony. The difference between the samples being taken adjacent to a building or in a low-lying area in a field is not sufficient for the court to conclude that Brown's conclusions could not "reliably follow from the facts known to the expert and the methodology used." *Heller*, 167 F.3d at 153. Plaintiffs offered a plausible explanation about why higher levels of arsenic were not found on other properties affected by black rain—namely, the length of time between the events and the sampling and intervening rain and tilling of soil. (Hr'g Tr. 120:18–121:4, Feb. 4, 2014, ECF No. 277.) This explanation is not, as suggested by defendant, "cryptic and enigmatic." *In re TMI Litig.*, 193 F.3d at 671. In the *TMI Litigation*, an expert explained the difference between estimated and measured doses of radiation by stating that "the reader has a chance to draw conclusions for himself, even if I may suggest a conclusion, but the reader can check this, these assumptions, and he has a chance to see for himself. He can choose which he believes." *Id.* at 672 (quoting the record). The court of appeals concluded that this "cryptic explanation" would not "assist the fact finder in understanding the evidence or determining a disputed issue of fact." *Id.*

Brown's opinion will assist the fact finder to determine a disputed issue of fact. The fact finder must weigh the inadequacies in Brown's testimony and determine whether the explanation for the lack of arsenic found on other properties is cogent.



Defendant can query Brown about possible alternative sources for the high arsenic levels on the Moore and Kern properties if such questions are based on facts in the record and not mere speculation. The jury can consider those alternatives in weighing Brown's testimony.

2. *Reliability of Opinion that Bruce Mansfield Was the Source of the Sampled Residues*

Brown opined that samples from plaintiffs' properties contained residue emitted by Bruce Mansfield. (Brown Rep. 38, ECF No. 169-1.) Brown took wipe samples from areas on plaintiffs' properties that had residue believed to be from Bruce Mansfield. (Brown Dep. 205:4-21, Feb. 28, 2013, ECF No. 169-5.) Brown attributed the residue to white or "stack" rain from Bruce Mansfield. (*Id.* at 38.) Defendant argues that Brown lacked sufficient certainty to opine the source of the residue. (ECF No. 167, at 8.)

Brown testified that he did not determine whether Bruce Mansfield was the source of the residue:

Q. Based on the results of those tests that you did at those locations, did you come to any conclusion one way or the other about whether the residue that you sampled was or was not from the Bruce Mansfield Plant?

A. No. I mean, some of it was correlatable with events, but we didn't make specific location determinations. ...

...

Q. Well, did you find anything in any of the samples that you took, any of the results of any of the samples, that in your mind ruled in or ruled out Bruce Mansfield as the source of any of those?

A. I'd have to go back through them all, but, I mean, nothing stands out.

(Brown Dep. 372:8-16, 374:7-15, Feb. 28, 2013, ECF No. 169-5.) Instead, Brown relied on experts Wayne Isphording ("Isphording") and James Millette ("Millette"),

who opined that samples from plaintiffs' properties collected by Brown and others contained material from Bruce Mansfield. (Brown Rep. 38, ECF No. 169-1.) Because Isphording and Millette could not determine how or when that material reached plaintiffs' properties, the court found that their opinions would not help the fact finder and granted defendant's motions to preclude their expert testimony. (ECF No. 278.) Brown cannot rely on this precluded testimony, and since he has no independent basis for the conclusion that the residue was the result of stack rain from Bruce Mansfield, he will not be permitted to offer this opinion.

### 3. *Qualification to Opine About Health Effects*

Defendant identified eight statements in Brown's report and supplemental report that contain opinions related to the effect of emissions on health:

1. "[B]ecause inadequate assessment has been conducted, a further health assessment should be undertaken." (Brown Rep., at ii, ECF No. 169-1.)
2. "Testing has also shown elevated arsenic concentrations in the scrubber liquid, which is a health threat to nearby residents and employees." (*Id.* at 56, ECF No. 169-2.)
3. "I have reviewed discovery documents and documents from PADEP files, and do not believe that an appropriate study has ever been undertaken to determine the actual risk or hazard to human health and the environment that the white and/or black rain deposition could have caused or is continuing to cause." (*Id.* at 57.)
4. "Based on the findings of the Pennsylvania Department of Health and ATSDR of the presence of toxic materials, as well as testing of source material and deposition material, I believe that a more thorough study is needed to determine the extent of the health risk resulting from toxic emissions from [Bruce Mansfield], as documented by Jim Smith, Jr. and Dr. Marilyn Howarth." (*Id.* at 59.)

5. “Given the chronic nature of the ‘stack rain,’ constituents involved, and nature of historic upset events, medical monitoring of receptors should be implemented to quantify stack gas contaminant exposure.” (*Id.* at 62–63.)
6. “Washing down cars and buildings but disregarding exposure to residents and the environment flies in the face of proper environmental science and prudent industrial operating practices.” (*Id.* at 65.)
7. “Sufficient work has not been completed by First Energy and there remains a potential health hazard, because First Energy did not complete proper delineation work, after its contractors washed black rain onto the ground.” (Brown Supp. Rep. 19, ECF No. 169-18.)
8. “There is no question that Unit 3 should be repaired and upgraded without further delay, so that daily violations of good operating practice requirements do not continue to occur, and proper sampling should be completed to address potential health threats once and for all.” (*Id.* at 26.)

Plaintiffs argue that these opinions are within the scope of Brown’s expertise as an environmental engineer and that he relied on other experts. (ECF No. 244, at 15.)

Brown is not a medical doctor or toxicologist and has never conducted a health study. (Brown Dep. 607:14–608:8, Mar. 1, 2013, ECF No. 169-8.) There is no evidence that he is qualified to opine about the health hazards of emissions, the need for a health risk assessment, or the need for medical monitoring. While an expert may rely on other experts, “[a] scientist, however well credentialed he may be, is not permitted to be the mouthpiece of a scientist in a different specialty.” *Dura Auto. Sys. of Ind., Inc. v. CTS Corp.*, 285 F.3d 609, 614 (7th Cir. 2002). Brown cannot simply repeat the risk assessment and medical opinions of James Smith and Marilyn Howarth. Brown will be precluded from testifying about statements 1–5 and 7–8. Brown is qualified to opine about environmental science and industrial operating practices, and he may offer the opinion in statement 6.

## ***B. Plaintiffs' Motions to Limit the Testimony of Nairn***

Nairn, a professional geologist, prepared an expert report (“Nairn Rep.”), dated October 29, 2012. Nairn rebutted the opinions of plaintiffs’ experts Isphording and Millette that fly ash particles found on plaintiffs’ properties are from Bruce Mansfield, rebutted the opinion of plaintiffs’ expert Brown that arsenic found on plaintiffs’ properties was from Bruce Mansfield, and opined that the concentrations of metals in white rain and black rain residue are much less than applicable health and safety standards. Plaintiffs object to Nairn’s report in three respects. Plaintiffs argue (1) the method used to evaluate the soil impacted by black rain is unreliable, (2) the opinion about background levels of arsenic is unreliable, and (3) the discussion of alternative sources of arsenic is speculative. Because the court finds that portions of these opinions are not based upon sufficient facts and data, the motions will be granted in part and denied in part.

### *1. Opinions Based upon Soil Analysis*

Nairn analyzed the residue of the 2006 and 2007 black rain events. Three days after the black rain discharge of July 22, 2006, Nairn’s company, Civil & Environmental Consultants, Inc. (“CEC”), collected sycamore leaves with black rain residue near Bruce Mansfield and control sycamore leaves that were unaffected by black rain. (Nairn Expert Rep. 2, ECF No. 205-2.) After the black rain event on June 10, 2007, CEC collected wipe samples from horizontal surfaces near Bruce Mansfield. (*Id.* at 4.) Nairn analyzed the samples from each event and calculated the concentration of metals in the soil by assuming mixing within the top foot of soil and the top tenth of an inch of soil. (*Id.* at 5.) Nairn concluded from the results of the mixing calculations that the metal concentrations contributed by the black rain events were “significantly less” than the relevant Pennsylvania health standard for arsenic.<sup>3</sup>

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3 The health standard for arsenic used by Nairn is 12 mg/kg, a limit found in 25 PA. CODE § 250, app. A, tbl.4.

Plaintiffs argue that extrapolating soil concentrations from leaf samples is unreliable. Specifically, plaintiffs assert that Nairn's mixing computation is arbitrary and inappropriate for calculating soil concentrations metals that were deposited from the air onto the surface of the ground. (ECF No. 205, at 10.) The proper methodology would be to take actual soil samples. (*Id.*) Plaintiffs additionally argue that the statewide health standards to which Nairn compared his results are not appropriate standards because they were designed for the reuse of previously contaminated industrial sites—vastly different from the uncontaminated residential properties at issue in these cases. (*Id.* at 9.)

In support of the contention that the mixing calculation was inappropriate, plaintiffs point to the testimony of fact witnesses who described seeing “clumps of ash” that were not mixed with the soil after the 2006 black rain event. (*Id.* at 3.) Brown took actual soil samples from plaintiffs' properties in 2011 and found “abnormally high” levels of arsenic in several locations. (*Id.*) In the wake of the black rain events, defendant power washed affected properties. Plaintiffs suggest that the power washing concentrated the residue in the soil, and that Nairn's methodology could not account for this contamination pathway. (*Id.* at 10.)

In response to the argument that Nairn should have conducted soil analysis, defendant asserts that a soil sample provides no evidence about the source of the metals found. (ECF No. 228, at 5.) Nairn's leaf sampling is evidence of the metals deposited by the black rain events and, defendant argues, relevant to rebut Brown's testimony about high levels of arsenic found in soil samples.

The court finds that Nairn's leaf-sampling methodology meets the standard for admissibility under *Daubert*. The discrepancy between the opinions of Nairn and Brown is a matter for the jury to consider. *See Mitchell*, 365 F.3d at 244. Any inadequacies in his opinion due to the use of his mixing calculations can be weighed by the jury. (*Id.*) Brown also compared sampling results to the Pennsylvania health

standard for arsenic of 12 mg/kg. (See Brown Rep. 72, ECF No. 169-2.) Plaintiffs can elicit testimony about the applicability of this standard.

## 2. *Opinion About Background Arsenic Levels*

Nairn opined that the background level of arsenic in southwestern Pennsylvania often exceeds 20 mg/kg. (Nairn Rep. 25, ECF No. 205-2.) This contrasts with Brown's opinion that "natural background concentrations of arsenic in the Beaver Valley area are in the single ... digits" in terms of mg/kg.<sup>4</sup> (Brown Rep. 42, ECF No. 169-1.) Nairn based his conclusion upon published literature, soil samples taken by Nairn, and a review of plaintiffs' soil sampling results. (Nairn Rep. 13, ECF No. 205-2.)

Plaintiffs argue that Nairn's opinions about the background level of arsenic and alternative sources of arsenic contamination are speculative and unreliable. (ECF No. 205, at 11.) Plaintiffs assert that there are "legally mandated methodologies to delineate the background conditions at a site." (*Id.* (citing 25 PA. CODE § 250.204).) Nairn did not adhere to those requirements and relied on extrapolation, sampling from other sites with undocumented conditions, and anecdotal or speculative evidence. (*Id.* at 11–12.) Defendant argues that Nairn properly offered his opinion regarding background levels of arsenic as rebuttal to Brown. (ECF No. 228, at 10.) Defendant asserts that Brown previously advocated for the Pennsylvania arsenic health standard to be reset to 20 mg/kg for the same reasons identified by Nairn. (*Id.* at 12.)

Nairn's failure to follow the procedures for selecting a background standard set forth in 25 PA. CODE § 250.204 is not relevant to the reliability of Nairn's opinions. The regulation sets forth the requirements for a selecting a "background standard"

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4 Part of the reason for this discrepancy appears to be the way the experts defined "background concentration." Brown referred to "natural background concentrations." (Brown Rep. 42, ECF No. 169-1.) Nairn discussed both natural and anthropogenic sources in his analysis. (See Nairn Rep. 10–11, ECF No. 205-2 (discussing former farms, orchards, and cemeteries as human sources of arsenic in soil).)

under the Pennsylvania Land Recycling and Environmental Remediation Standards Act, 35 PA. STAT. §§ 6026.101–.908. While the regulation may be evidence of scientifically reliable procedures, nothing about the regulation indicates that following those procedures and reporting requirements is the only reliable methodology. Nairn’s opinion about the background level of arsenic is not related to land recycling or remediation.

Nairn supported his background level opinion with sampling data. Nairn reported that “[i]t has been CEC’s experience that arsenic concentrations in southwestern Pennsylvania as high as 30 mg/kg can be representative of naturally occurring arsenic in soil.” (Nairn Rep. 11, ECF No. 205-2.) During his deposition, Nairn explained that he could not remember where the 30 mg/kg sample was taken and could not find the report he had written about it. (Nairn Dep. 79:6–25, Apr. 22, 2013, ECF No. 205-1.) The contention that arsenic concentrations of 30 mg/kg can be representative of natural background levels is not based upon “sufficient facts or data.” FED. R. EVID. 702(b). Nairn will be precluded from testifying about the 30 mg/kg sample.

Nairn also relied on two samples he took near the Beaver River in 2001 with concentrations of 17 mg/kg and 26 mg/kg. (Nairn Rep. 10–11, ECF No. 205-2.) His report contained the location and sample depth for these samples. Nairn cited a peer-reviewed article which reported data from 408 samples in Pennsylvania. (*Id.* at 9.) The court concludes that after excluding the statement about the 30 mg/kg sample, Nairn had sufficient facts or data to support his opinion that background levels of arsenic in Pennsylvania can exceed 20 mg/kg, and he will not be precluded from testifying about this opinion and supporting evidence.

### 3. *Opinion About Alternative Sources of Arsenic*

Brown collected soil samples from plaintiffs’ properties in November 2011. Analysis of two samples from the Moore property showed arsenic concentrations of 63 mg/kg and 110 mg/kg. (Brown Dep. 309:6–14, Feb. 28, 2013, ECF No. 169-5.)

Three other samples from the Moore property showed concentrations of 6.9, 13, and 14 mg/kg. (*Id.* 309:3–11, 313:2–8.) Nairn opined that the high variation between samples “suggests a discrete arsenic source(s) for the elevated arsenic levels, such as a pesticide or copper, chrome and arsenic (CCA) treated lumber.” (Nairn Rep. 24, ECF No. 205-2.) Nairn also asserted that the Moore property had been used as an auto wrecking yard and is near farmland and pastures. (*Id.* at 12.) The sample with 63 mg/kg was taken from soil next to a deck built with treated lumber. (*Id.*)

Plaintiffs argue that Nairn’s discussion of alternative sources, particularly his references to treated lumber, is unsubstantiated and speculative. (ECF No. 205, at 12.) Nairn admitted that lumber treated with arsenic, while common in the past, is no longer used for residential purposes. (Nairn Dep. 92:14–25, ECF No. 205-1.) Nairn did not test the lumber to determine whether it was treated with copper, chrome, and arsenic, and he did not determine the age of the lumber. (*Id.* at 92:11–13, 93:1–5.)

The court does not understand Nairn to be offering an opinion that the actual cause of the elevated concentration of arsenic in the sample was the treated lumber. Nairn merely suggested that treated lumber could explain the variation between samples. (Nairn Rep. 24, ECF No. 205-2.) This type of speculation could mislead the jury and would not be helpful. Defendant had the opportunity to test the lumber at issue, but did not. Because no evidence in the record supports the theory that the lumber was treated with copper, chrome, and arsenic, Nairn may not opine that treated lumber was a potential source of the elevated levels of arsenic. Nairn similarly may not opine about pesticide, fertilizer, or junk-yard debris, unless facts showing that kind of source existed on the Moore property are admitted into evidence.

#### **IV. Conclusion**

The motions to preclude the expert testimony of Brown will be granted in part and denied in part. Brown may offer his opinion about the soil contamination stemming from the 2006 and 2007 black rain events. Brown may not opine about



residue from white rain or stack rain. Brown also may not testify about the health hazards of emissions, the need for a health risk assessment, or the need medical monitoring, but he may offer his opinion with respect to sound environment engineering and industry practices.

The motions to limit the expert testimony of Nairn will be granted in part and denied in part. Nairn may testify about his leaf sampling analysis and his opinion about background levels of arsenic. Nairn may not give an opinion about potential alternative sources of arsenic on the Moore property, unless facts showing that an alternative source existed on the Moore property are admitted into evidence.

Appropriate orders will be entered.

Dated: March 25, 2014

/s/ Joy Flowers Conti  
Joy Flowers Conti  
Chief United States District Judge