

IN THE DISTRICT COURT OF THE VIRGIN ISLANDS  
DIVISION OF ST. CROIX

COMMISSIONER OF THE DEPARTMENT	:	CIVIL ACTION
OF PLANNING AND NATURAL	:	
RESOURCES, ALICIA V. BARNES,	:	
et al.	:	
	:	
	:	
v.	:	
	:	
CENTURY ALUMINUM COMPANY,	:	
et al.	:	NO. 05-62

MEMORANDUM

Bartle, J.

March 26, 2013

Plaintiffs, Commissioner of the United States Virgin Islands Department of Planning and Natural Resources, Alicia V. Barnes (the "Commissioner"), and the Government of the Virgin Islands (together with the Commissioner, the "Government"), filed this multi-count environmental lawsuit against entities who at various times owned portions of an industrial area in Kingshill, St. Croix on which both an alumina refinery and an oil refinery have operated. These defendants were Century Aluminum Company ("Century"), Virgin Islands Alumina Corporation ("VIALCO"), St. Croix Alumina, LLC ("SCA"), Lockheed Martin Corporation ("Lockheed"), Alcoa World Alumina, LLC, ("Alcoa"), St. Croix Renaissance Group, LLLP ("SCRG"), HOVENSA, LLC ("HOVENSA") and Hess Oil Virgin Islands Corporation ("HOVIC").<sup>1</sup> We have

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1. The Virgin Islands Port Authority and the Virgin Islands Waste Management Authority are third-party defendants sued by  
(continued...)

previously approved a settlement between the Government and SCA, Alcoa, and SCRG and granted summary judgment in favor of Century. Accordingly, the remaining defendants are VIALCO, Lockheed, HOVENSA, and HOVIC.

There are a number of pending motions under Daubert v. Merrel Dow Pharmaceuticals, 509 U.S. 579 (1993). We will now consider the motion of defendants HOVENSA and HOVIC (together, the "Refinery Defendants") to exclude the expert report and testimony of Charles B. Andrews, Ph.D. ("Dr. Andrews") on certain matters and the motion of Lockheed to exclude the opinion testimony of Dr. Andrews and the opinion testimony of other experts who rely on Dr. Andrews. We will also consider the motion of Lockheed to strike the late-filed declaration of Dr. Andrews.

I.

The court has a "gatekeeping" function in connection with expert testimony. See Gen. Elec. Co., et al. v. Joiner, 522 U.S. 136, 142 (1997); see also Daubert, 509 U.S. at 589. Rule 702 of the Federal Rules of Evidence provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon

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1. (...continued)  
defendants VIALCO and Lockheed and former defendant Century for contribution.

sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

As our Court of Appeals has repeatedly noted, Rule 702 embodies three requirements: qualification, reliability, and fit. Pineda v. Ford Motor Co., 520 F.3d 237, 244 (3d Cir. 2008).

An expert is qualified if he "possess[es] specialized expertise." Schneider ex rel. Estate of Schneider v. Fried, 320 F.3d 396, 404 (3d Cir. 2003). This does not necessarily require formal credentials, as "a broad range of knowledge, skills, and training qualify an expert," and may include informal qualifications such as real-world experience. In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 741 (3d Cir. 1994). The qualification standard is a liberal one, and an expert may be sufficiently qualified under Rule 702 even if "the trial court does not deem the proposed expert to be the best qualified or because the proposed expert does not have the specialization that the court considers most appropriate." Holbrook v. Lykes Bros. S.S. Co., 80 F.3d 777, 782 (3d Cir. 1996).

To determine reliability, we focus not on the expert's conclusion but on whether that conclusion is "based on the methods and procedures of science rather than on subjective belief or unsupported speculation." Schneider, 320 F.3d at 404 (internal quotation marks omitted). Our analysis may include such factors as:

(1) whether a method consists of a testable hypothesis; (2) whether the method has been subject 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.

Pineda, 520 F.3d at 247-48.

"[T]he test of reliability is flexible" and this court possesses a broad latitude in determining reliability. Kumho Tire Co. v. Carmichael, 526 U.S. 137, 141-42 (1999). To be reliable under Daubert, a party need not prove that his or her expert's opinion is "correct." Paoli, 35 F.3d at 744. Instead:

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 Bottling Co., 161 F.3d 77, 85 (1st Cir. 1998)).

As for "fit," expert testimony must also "assist the trier of fact to understand the evidence or to determine a fact in issue." Fed. R. Evid. 702. Thus, to "fit," such evidence must bear some relation to the "particular disputed factual

issues in the case." United States v. Downing, 753 F.2d 1224, 1237 (3d Cir. 1985). Accordingly, this factor has been described as one of relevance. Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 591 (1993); Paoli, 35 F.3d at 745 & n.13.

II.

Dr. Andrews is a groundwater hydrologist who was retained by the plaintiffs in order to evaluate potential groundwater contamination from bauxite ore processing at the former alumina facility. Dr. Andrews has opined as follows:

The Kingshill Aquifer is the principal aquifer on St. Croix and is regionally contiguous;  
The Kingshill Aquifer would be a potential source of potable water at the refinery site except for releases from the refinery;  
Remediation pumping from the Kingshill Aquifer has resulted in the discharge to the sea of over 2.4 billion gallons of groundwater and remediation pumping from the shallow aquifer has resulted in the discharge to the sea of over 0.8 billion gallons of groundwater. Future remediation pumping over the next thirty years is estimated to result in discharge of an additional 1.2 billion gallons of groundwater from the Kingshill Aquifer and 0.3 billion gallons from the shallow aquifer to the sea.  
Extensive groundwater contamination existed at the Refinery by 1982;  
The volume of groundwater in the Kingshill Aquifer affected by contamination from the refinery is currently about 3.4 billion gallons, and the volume of contaminated groundwater in the shallow aquifer is about one-half billion gallons;  
The volume of groundwater contamination will remain relatively unchanged for the indefinite future because of the large amount of residual petroleum in the subsurface even with continued operation of the groundwater recovery systems.

Other experts relied on these opinions in forming their own opinions. These include: Michael T. Rafferty, who opined on an appropriate remedy to restore the allegedly affected groundwater and the costs associated with such a remedy; Constance Travers, James Holmes, and Dr. Joshua Lipton, who opined in the report produced by Stratus Consulting Inc. regarding aggregated damages to natural resources caused by the allegedly affected groundwater; and Dr. Kevin Boyle, who opined regarding natural resource damages associated with the allegedly affected groundwater.

### III.

We will first address the motion of the Refinery Defendants to exclude the opinions of Dr. Andrews. First, they argue that his opinion on the volume of affected groundwater should not be admitted because it is not based on scientific principles or an accepted methodology used by experts in the field. We are not persuaded. Dr. Andrews summarizes his methodology in his expert report as follows:

The lateral extent of groundwater affected by site contaminants was estimated based on the presence of free product in wells, water quality data, and the hydrogeologic conditions at the site. Summary maps of the maximum concentration of arsenic, naphthalene [sic], MTBE, TPH, and total BTEX measured in groundwater (data as available in database received July 2011) were prepared for the time periods 1989-1992, 1993-1997, 1998-2002, and 2003-2010. Maps of the maximum thickness of free product (or PSH, phase-separated hydrocarbon) measured in monitoring wells during the following periods were prepared: 1982, 1986, 1992, 2002, and 2010.

The above information was overlaid using GIS methods, and the extent of the affected groundwater for the following time periods was delineated:

- 1982 - based on 1982 PSH thickness data
- 1986 - based on PSH thickness data
- 1992 - based on 1992 and 1986 PSH thickness (1992 data extent was limited), and 1989 to 1992 water quality data
- 2002 - based on 2002 PSH thickness and 1993-2002 water quality data
- 2010 - based on 2010 PSH thickness and 2003-2010 water quality data

The following assumptions were applied:

- any measureable [sic] thickness of free product or detectable concentration of BTEX, MTBE, naphthalene or TPH was considered to indicate affected groundwater. Arsenic concentrations greater than 10 ug/L were considered to indicate affected groundwater.
- the direction of groundwater flow based on water level data was used to estimate the direction of movement of affected groundwater to delineate the extent of the plume where water quality data were not available.

...

The porosity of the Kingshill Aquifer was specified to be 0.41 based on porosity tests conducted on core samples from the site (Maxim, 19954), and the porosity of the shallow aquifer was specified to be 0.25 based on material types. The effective saturated thickness of the Kingshill Aquifer was specified as a uniform 50 feet. This thickness was derived from the open interval of production wells at the refinery and in the vicinity of the refinery. The effective saturated thickness of the shallow aquifer was specified to be 10 feet based on average thickness determined from water-level data.

Furthermore, in his deposition, Dr. Andrews explained that he "used the similar methods or the same methods and for almost all the work that I do. And, you know, I've probably

worked on, you know, well, more than a hundred contaminated sites in my profession. There wasn't anything special that I did in this case." He further testified as follows on this topic:

Q: Is it standard practice in the field of hydrogeology to rely on nonquantitative information in forming opinions?

A: Well, it's standard practice to use or try to assemble all the available information be it qualitative or quantitative and to use that as a foundation for your analyses and ultimate opinions.

Q: And that's what you did here?

A: Yes.

In their response to the defendants' motion, plaintiffs explain that Dr. Andrews followed a methodology similar to that used in other studies of groundwater contamination, including that described in the Louisiana Department of Environmental Quality's Risk Evaluation/Corrective Action program manual. The defendants contend that there are differences in these methodologies which make Dr. Andrews' methodology unreliable. These small differences are not sufficient for us to exclude Dr. Andrews' opinions. The defendants, of course, are welcome to bring out at trial that these differences in Dr. Andrews' methodology make his opinions not credible.

Similarly, the parties disagree on whether it is standard industry practice to analyze multiple contaminants together instead of isolating each. Based on the information before us, we do not find his opinions unreliable.



The Refinery Defendants also argue that Dr. Andrews' opinion on the volume of affected groundwater is unreliable because he "used the maximum concentrations of certain chemical constituents detected in a sample from 2003 to 2010, and if he could not find concentrations in that time period, he used the historic maximum concentration using data prior 2003." Plaintiffs disagree that using maximum concentrations causes unreliability. They counter that this is standard industry practice, "especially where data are not consistently collected on a frequent basis over a representative area of the site." They also note that ES&T, defendants' "non-litigation remediation consultant" also used this methodology to determine the extent of contamination. We are not convinced that the methodology is unreliable, and we will accordingly not exclude the opinions based on it.

The Refinery Defendants further challenge Dr. Andrews' method of including some uncontaminated areas of groundwater as part of the volume of affected groundwater. The plaintiffs explain that it is industry practice, including practices in the Louisiana Department of Environmental Quality's Risk Evaluation/Corrective Action program manual, to include non-contaminated locations within the area that is contaminated when delineating groundwater plumes. Dr. Andrews further notes that with a "Swiss cheese pattern of affected groundwater," as exists here, it does not make sense to exclude the non-contaminated locations since "groundwater is continuous and it's flowing."

Any defects with this methodology do not rise to the level requiring excluding Dr. Andrews' testimony.

The Refinery Defendants also dispute Dr. Andrews' porosity assumption of 0.41 and his saturated thickness assumption of a uniform 50 feet. Porosity is "the fraction of subsurface media volume occupied by voids," and saturated thickness is "the thickness of the aquifer that is saturated with water." The figures used by Dr. Andrews are reliable under Daubert. He based the porosity value upon tests conducted by Maxim, a consultant working for HOVIC, which measured the porosity in eight Kingshill Aquifer samples collected on the refinery and measured values ranging from 29% to 55%. The average of these values is 41%, that is 0.41. ES&T, Hovensa's consultant, used similar porosity values. The defendants may, of course, dispute them on cross-examination. Further, Dr. Andrews provided his methodology and values for the saturated thickness, and we find this reliable.

In addition, the Refinery Defendants argue that Dr. Andrews' opinions on future groundwater remediation pumping and future groundwater contamination should not be admitted because they are inconsistent with the facts and fail to evaluate factors that others in the scientific community would have evaluated prior to rendering an opinion. Dr. Andrews opines that "[g]roundwater pumping for remediation purposes is expected to continue indefinitely" and that by 2034 there will be 78,000 gallons of groundwater pumped daily. The Refinery Defendants

contend that Dr. Andrews had no scientific basis for these opinions. We disagree. Dr. Andrews explained his methodology at his deposition. Essentially, he added together the pumping currently occurring within the refinery boundaries. He explained that in 2026 he would still expect to find elevated levels of arsenic near the eastern boundaries and petroleum products near the western boundaries which would require pumping. He described his methodology as follows:

I looked at the aerial distribution of the arsenic, the amount of volume that was represented by the arsenic in groundwater, and looked at the amount of water that would -- and looked at the amount of water that would be removed into the future, and determined that it was insufficient to flush that portion of the aquifer sufficiently to remove all of the arsenic.

This explanation constitutes "good grounds" for Dr. Andrews' opinions on the future groundwater remediation pumping, and we will accordingly admit them. See Holbrook, 80 F.3d at 784.

The Refinery Defendants also maintain that Dr. Andrews' opinion that groundwater discharged into the Caribbean Sea by the pumping that is occurring under current remediation efforts is wasted should be excluded because it is illogical and not supported by any scientific literature. This argument was also raised in the Daubert motions regarding Kevin J. Boyle, Ph.D. ("Dr. Boyle"). Here, as there, we are not convinced that this testimony is unreliable under the circumstances. Although the groundwater under the refinery flows into the Caribbean Sea under natural conditions, plaintiffs counter that much of the

groundwater could be put to a more productive use. There is no basis to reject this testimony under Daubert.

Finally, the Refinery Defendants want the court to preclude Dr. Andrews' opinion that refinery pumpage affects groundwater availability outside the refinery boundaries. The Refinery Defendants maintain that this opinion is contradicted by his own testimony and unreliable as not independently verified. We are not persuaded. Dr. Andrews' report makes it clear that he relied on the United States Geological Survey ("USGS") study performed in 1987, the same study relied on by Syed Syedali. Dr. Andrews further cites three other peer studies which are consistent with the USGS findings. This is sufficient under Daubert to admit this opinion.

None of the Refinery Defendants' other arguments has any merit. In sum, "[h]elpfulness to the trier of fact remains the ultimate touchstone of admissibility. If the expert has 'good grounds' for the testimony, the scientific evidence is deemed sufficiently reliable." Holbrook, 80 F.3d at 784. Dr. Andrews has "good grounds" for his opinions, and we will not exclude them. Accordingly, we will deny the motion of the Refinery Defendants to exclude the opinions of Dr. Andrews.

IV.

Lockheed's motion under Daubert to exclude the opinion testimony of Dr. Andrews makes similar arguments to those of the Refinery Defendants. It contends that Dr. Andrews does not set forth a sufficiently detailed explanation of his methodology to

allow for testing and that his opinions are not supported by sufficient facts or data to ensure their reliability. We have already addressed the reliability of Dr. Andrews' opinions on the affected groundwater, and Lockheed's arguments do not change this analysis.

Lockheed also argues that Dr. Andrews' proposed remedial action is "inappropriate and unnecessary." Dr. Andrews proposes the following remedy in his report:

Nine extraction wells in the Kingshill Aquifer to capture the contaminated groundwater and to prevent discharge of contaminated groundwater to the ship channel pumping at an approximate combined rate of 63 gpm;  
A 4,600-foot long groundwater collection trench along the eastern and southern perimeters of the old red mud pond to capture contaminated groundwater flowing towards the channel and lower cooling pond, estimated to capture 10gpm;  
Water treatment system to treat groundwater from extraction wells and collection trench.

Lockheed seeks to exclude this opinion because it:

(i) failed to weigh the remedy's cost against its potential benefits, (ii) failed to identify any harm the remedy would prevent, and (iii) otherwise failed to explain why the remedy would be necessary in addition to the remedial work that will be implemented as a result of the February 2012 settlement ... between some of the former owners of the Site and the government of the Virgin Islands.

However, Dr. Andrews weighed the remedy's cost against its potential benefits in his report. Indeed, he stated:

The proposed remedy will remove and treat less than the volume of affected groundwater over the next 50 years and empirical observations have demonstrated that removal

of several times the volume of affected groundwater is required to restore groundwater quality to baseline conditions. More aggressive remedies were investigated but they were judged to not be feasible for this site because of high costs, potential for saline intrusion, and potential for mobilization of petroleum.

Furthermore, he also identified the harm the remedy would prevent when he provided that its objectives are to "protect environmental receptors in the Alucroix Channel, lower cooling pond and Caribbean Sea by eliminating discharge of contaminated groundwater and nutrient laden groundwater to these water bodies." We see no basis to exclude this opinion under Daubert.

Lockheed's final argument in its Daubert motion is that the opinions of experts who rely on Dr. Andrews should also be precluded. For the reasons set forth above, this aspect of Lockheed's motion is without merit.

V.

Lockheed also moves to strike a late-filed declaration of Dr. Andrews under Rule 37(c)(1) of the Federal Rules of Civil Procedure, which provides:

If a party fails to provide information or identify a witness as required by Rule 26(a) or (e), the party is not allowed to use that information or witness to supply evidence on a motion, at a hearing, or at a trial, unless the failure was substantially justified or is harmless.

Fed. R. Civ. P. 37(c)(1). Dr. Andrews was named in the plaintiffs' original Rule 26 disclosures as a person with

discoverable information and provided an expert report during discovery. He then provided the declaration in issue as an exhibit to the plaintiffs' brief in response to the defendants' motions under Daubert to exclude his testimony. Rule 26(e) of the Federal Rules of Civil Procedure provides:

(1) In General. A party who has made a disclosure under Rule 26(a) ... must supplement or correct its disclosure or response:

(A) in a timely manner if the party learns that in some material respect the disclosure or response is incomplete or incorrect, and if the additional or corrective information has not otherwise been made known to the other parties during the discovery process or in writing; or

(B) as ordered by the court.

(2) Expert Witness. For an expert whose report must be disclosed under Rule 26(a)(2)(B), the party's duty to supplement extends both to information included in the report and to information given during the expert's deposition. Any additions or changes to this information must be disclosed by the time the party's pretrial disclosures under Rule 26(a)(3) are due.

The court must consider four factors before striking testimony due to a party's failure to comply with the discovery rules. We examine the "prejudice or surprise" to the party against which the evidence would be admitted, the ability to cure that prejudice, "the extent to which allowing the evidence would disrupt the orderly and efficient trial of the case or other cases in the court," and "bad faith or wilfulness" on the part of the disclosing party in "failing to comply with a court order or

discovery obligation." Nicholas v. Pa. State Univ., 227 F.3d 133, 148 (3d Cir. 2000). In applying these factors, we may consider the importance to the disclosing party of the proposed witnesses' testimony. Konstantopoulos v. Westvaco Corp., 112 F.3d 710, 719 (3d Cir. 1997).

Based on the above factors, we will not strike Dr. Andrews' declaration. There is no prejudice or surprise to any of the defendants if Dr. Andrews' declaration is not stricken. Dr. Andrews provided an expert report and was deposed on his opinions. The declaration is a clarification of those opinions in response to the defendants' Daubert motions. Dr. Andrews does not change any of his opinions in the declaration or provide any new opinions. Lockheed had notice of Dr. Andrews' methodology, the facts of the case, and his opinions. This is sufficient under the circumstances to avoid surprise or prejudice.

The declaration also does not "disrupt the orderly and efficient trial of the case or other cases in the court." It is merely in response to one of the many motions filed under Daubert that the court is still addressing. It changes nothing in terms of the schedule for trial. Lockheed also has not introduced any evidence to show that the plaintiffs' filed Dr. Andrews' declaration in bad faith, and Dr. Andrews' testimony is important for the plaintiffs at trial. Accordingly, we will not strike it.