

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.

December 18, 2012

Plaintiffs, Commissioner of the U.S. 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 where 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").¹ We have

1. The Virgin Islands Port Authority ("VIPA") and the Virgin Islands Waste Management Authority ("VIWMA") are third-party
(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). The first for our consideration is the motion of defendants HOVENSA and HOVIC (together, the "Refinery Defendants") to exclude the expert report and testimony of Vance P. Vicente, Ph.D. ("Dr. Vicente").

I.

The court has a "gatekeeping" function in connection with expert testimony. See Gen. Electric 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 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.

1.(...continued)
defendants sued by defendants Vialco and Lockheed and former defendant Century for contribution.

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).

The Refinery Defendants do not question the credentials of Dr. Vicente. He has a Ph.D. in marine sciences from the University of Puerto Rico. Among other accomplishments, he has held multiple committee membership positions at the National Oceanic and Atmospheric Administration ("NOAA"), including chairman of the Habitat Panel Committee and the Scientific and Statistics Committee, specifically of the Caribbean Fishery Management Council. He has also held adjunct professor and lecturer positions at the University of Puerto Rico and has been a guest scientist at the Smithsonian Institution in Washington, D.C. Further, from 1980 to 2011, he was a principal investigator of ecological studies on the south coast industrial area on St. Croix's southern shore, researching marine pollution in the Caribbean Sea for the Center for Energy and Environmental Research at the University of Puerto Rico.

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 v. Fried, 320 F.3d 396, 404 (3d Cir. 2003) (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." In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 744 (3d Cir. 1994). 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)).

II.

Dr. Vicente was retained by the plaintiffs "to conduct and evaluate marine benthic studies" within the south coast industrial area on St. Croix in order to "evaluate the presence or absence of and the general conditions of" various marine

ecosystems within this area. He was also to "evaluate the injuries, if any, caused by" the entities who at various times owned or operated the oil refinery and now shuttered alumina refinery. In describing his methodology, Dr. Vicente stated, "[a] study was designed to sample benthic sediments for contaminants and to conduct a qualitative assessment of the general biological conditions of the seafloor within and in the vicinity of each sediment sampling station." To carry out this qualitative assessment, twenty-five underwater benthic locations, that is stations, were inspected between January 16, 2012 and January 19, 2012. The stations were positioned using standard GPS technology. The inspections consisted of taking pictures, notes, and filming underwater video transects covering a minimum area of forty square meters of ocean floor. To put it simply, these were observational studies. All of the notes, videos, and photographs have been preserved, and the exact locations of the stations have been recorded.

Dr. Vicente presented five opinions in the expert report at issue. First, he opined that underwater components of red mangroves within the Krauss Lagoon Channel were found injured. He explained that "[r]ed mangrove roots were observed stunted and therefore prevented from penetrating and stabilizing the shoreline. Seedlings were observed overgrown by an apparent allochthonous mineralization process and the mangrove root community showed low biomass and/or low diversity, typical of polluted conditions." In their brief in opposition to the motion

to exclude Dr. Vicente's report and testimony, plaintiffs concede, "Dr. Vicente's opinions regarding the stunted mangroves have no relationship to the Refinery contamination."

Accordingly, we will exclude the portions of Dr. Vicente's report and any testimony related to the stunted mangroves.

Dr. Vicente's second opinion concerns seagrasses. He discussed two different species of seagrass, paddle grass and turtle grass. He stated that the "potential for colonization" of paddle grass beds within the Alucroix Channel, Alumina Bay (both within the Krauss Lagoon Channel), the East Turning Basin, and the West Turning Basin has been destroyed. According to Dr. Vicente, the absence of paddle grass in these areas was "unusual" and "probably associated with contaminated sediments." He further concluded that the absence of paddled grass "can be attributed to toxic contaminants either in the marine sediments and/or in the water column."

He also stated that turtle grass was injured in the Krauss Lagoon Channel and absent in the East Turning Basin and the West Turning Basin. He opined that the injuries in the turtle grass in the Alucroix Channel occurred "probably by eutrophication" and its absence in the East and West Turning Basins was "probably due to contaminants in the sediments of the basins."

The defendants contend that his observations concerning the seagrasses should be excluded because Dr. Vicente did not properly use the transect methodology. The Refinery Defendants

assert that his sample size was too small, and he did not select locations based on NOAA maps of areas that are habitat for seagrasses. Any deficiencies in Dr. Vicente's sample size or the locations of his stations may be addressed on cross-examination but do not cause his observations to be unreliable under Daubert. See United States v. Mitchell, 365 F.3d 215, 244 (3d Cir. 2004) (citations omitted).

The defendants further contend that Dr. Vicente's opinions are unreliable with respect to the cause of the absence of and the injuries to the seagrasses. We agree. As discussed, Dr. Vicente's methodology was based on observation of the seagrasses. In his report, he states that the lack of seagrasses in these areas was unusual, and there were more seagrasses in nonindustrial areas on St. Croix.

Although not discussed in his report, Dr. Vicente elaborated in his deposition by stating that he observed sulphur during his dives, and "[o]ne of the basis [sic] for stating that to a reasonable degree of scientific certainty of contaminants either in the soil or in the water column is based on the abundance of sulphur [sic] granules that were deposited within a significant area.... That could be one if not the most significant contaminant affecting seagrasses." Dr. Vicente went on to explain that literature exists which demonstrates that sulfur compounds at significant concentration can kill seagrasses. He did not cite any specific literature.

Dr. Vicente also testified in his deposition that in the West Turning Basin he felt "black, sticky mud, different from all other type of mud bottoms that I have seen except Guayanilla Bay near the distillery areas." Dr. Vicente went on to say that he asked Dr. Hennet, "[w]here is this coming from," to which Dr. Hennet responded that it "can be explained by ground water from past, from previous operation of the aluminum processing and waste disposal or waste treatment of the production, used in the production." Dr. Vicente then stated that a complete list of nutrients and micronutrients being in the Alucroix Channel could be found in Dr. Hennet's report. In support of this, he also stated that he was "able to review really quickly [Dr. Hennet's] opinion on the effect of sulphur granules."

Dr. Vicente has not explained why he concludes that contaminants and not any other cause explains the damage to the seagrasses. Nor has he provided any chemical concentrations in the sediment, water, or seagrasses or compared any such chemical concentrations to a control group. Although all possible causes need not be eliminated before an expert's testimony will be admitted, "[o]bvious alternative causes need to be ruled out." Heller v. Shaw Indus., Inc., 167 F.3d 146, 156 (3d Cir. 1998) (citing Daniel J. Capra, The Daubert Puzzle, 32 Ga. L. Rev. 699, 728 (1998)). Dr. Vicente's report was conclusory and did not mention any alternative causes that he considered. See Pritchard v. Dow Agro Sciences, 705 F. Supp. 2d 471, 491 (W.D. Pa. 2010) (affirmed by Pritchard v. Dow Agro Scis., 430 F. App'x 102, 104

(3d Cir. 2011)). "[N]othing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." General Elec. Co. v. Joiner, 522 U.S. 136, 145-46 (1997).

Dr. Vicente may testify about his observations of seagrasses, including the sulfur and the color and texture of the mud, but not about the causes of these environmental conditions since he has not ruled out any other alternative causes or provided any bases for the causes other than unidentified literature, his skim of Dr. Hennessey's report, and his conversation with Dr. Hennessey. Defendant Lockheed has filed a separate Daubert motion to exclude the report and testimony and Dr. Hennessey. We will address Dr. Hennessey's theories of causation when we turn to that motion. It will be for him and any of the other experts, if they meet the appropriate legal standard, to testify as to causation.

In his third opinion, Dr. Vicente stated that "[t]he mud bottom infauna of the South Coast Industrial Site has been injured." Specifically, he noted that there was significantly less mud bottom infauna in the south coast industrial site than on the northwest coast of St. Croix, a non-industrial site. He made his measurements by analyzing the "mean number of invertebrates per grab" in each location. Dr. Vicente did not

provide any cause for this smaller amount of mud bottom infauna in his report.

The defendants contend that Dr. Vicente's report and testimony should be excluded with regard to the mud bottom infauna because the non-industrial site he used as a comparator is too different to serve as a proper comparator, and his data from that site was older than his data from the industrial site. They also maintain that his opinion is compromised because he should have conducted tests to analyze the chemistry of the mud bottom infauna. These arguments are appropriate for cross-examination but do not convince us that Dr. Vicente's report and testimony on the mud bottom infauna are unreliable. Dr. Vicente was not required to conduct his investigation in the "best" manner, merely a generally reliable one. See Paoli, 35 F.3d at 744. The defendants do not contest his method of measuring the "mean number of invertebrates per grab," and there is no suggestion that it is unreliable to measure mud bottom infauna in this way. Dr. Vicente has not opined on the cause of the decreased mud bottom infauna, but simply reported that there is less in one area than another. We will thus deny the defendants' motion with regard to the mud bottom infauna.

In his fourth opinion, Dr. Vicente stated that "[e]utrophication was evident in the Alucroix Channel. The deep green color of the water (phytoplankton bloom), the thick green algal mats of sea lettuce (e.g. Ulva spp.), and the abnormal growth of other macro algae (e.g. Gracilaria mamillaris) impairs

the development of species such as seagrasses [and] corals...." Dr. Vicente explained that phytoplankton can be toxic and kill fish and shellfish, and macro algae can displace seagrasses by shading. He further noted that "seagrass distribution in eutrophic waters is affected by increased sediment sulfide ... concentrations resulting from decomposition in anoxic organic-rich sediments."

Dr. Vicente did not provide the cause of the eutrophication in his report. Rather, he described his observations of the eutrophication and also explained in general terms what eutrophication may lead to, such as toxic phytoplankton. Dr. Vicente is qualified to be an expert on marine ecology and may explain eutrophication to the jury. His observations and explanation are reliable. Thus, we will deny the motion of the defendants as to Dr. Vicente's eutrophication opinion.

Dr. Vicente's last opinion, regarding the "areal extent of injuries," was that "[a]pproximately 0.418606 km² of the Krauss Lagoon Channel, .362116 km² of the East Turning Basin, and .363937 km² of the West Turning Basin have probably been injured by contaminants in the sediments and/or in the water column from industrial activity within the site." The plaintiffs have notified the court in their opposition brief that they are withdrawing this opinion since they "are not quantifying damages to monetize marine habitat loss." Accordingly, we will grant the

motion of the defendants with regard to Dr. Vicente's opinion on the "areal extent of injuries."

In sum, we will grant the motion of the defendants as to any portion of Dr. Vicente's report and testimony regarding stunted mangroves, the causes of the injured and absent seagrasses, and the areal extent of injuries. We will deny the motion as to the remainder of Dr. Vicente's report and testimony, which includes his observations of seagrasses, his observations and measurements of mud bottom infauna and his observations and general commentary about eutrophication.