UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA

FLORINE SHANLEY, ET AL., **Plaintiffs**	**CIVIL ACTION**
VERSUS	**NO. 12-3045**
CHALMETTE REFINING, LLC, ET AL. **Defendants**	**SECTION: "E" (5)**

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This is a toxic tort case involving the emission of hydrogen sulfide ("H2S") and sulfur dioxide ("SO2") from a refinery in Chalmette, Louisiana owned and operated by Defendant Chalmette Refining, LLC ("CRLLC"). 1836 plaintiffs allege exposure to H2S and SO2 caused them a variety of physical and mental damages. At the request of the parties, the Court agreed to a reverse-bifurcation of four Bellwether Plaintiffs. The question presented is whether the Bellwether Plaintiffs have presented evidence sufficient to sustain their burden of proving causation.

This case was tried before the undersigned without a jury. Having considered the evidence admitted at trial and the arguments of counsel, the Court announces its Findings of Fact and Conclusions of Law pursuant to Federal Rule of Civil Procedure 52. To the extent a finding of fact constitutes a conclusion of law, the Court adopts it as such. To the extent a conclusion of law constitutes a finding of fact, the Court adopts it as such.

FINDINGS OF FACT

I. The Release and Subsequent Air Monitoring

1. CRLLC owns a refinery at 500 West St. Bernard Highway, Chalmette, LA (the "Refinery").

2. On the evening of October 10, 2011, H2S and SO2 normally processed in the Refinery's sulfur recovery unit were diverted to the flare gas recovery system.

3. From approximately 8:21 p.m. on October 10, 2011 to approximately 12:15 a.m. on October 11, 2011, the Refinery released H2S and SO2 into the atmosphere (the "Release").

4. The total H2S emitted was approximately 595 pounds. The total SO2 emitted was approximately 191,800 pounds.

5. During the Release, the St. Bernard Parish Fire Department and the Refinery received citizen complaints of a foul odor and, in some cases, of physical symptoms such as burning eyes and nose irritation.

6. CRLLC reported the Release to regulatory authorities.

7. CRLLC employed a third-party environmental firm—U.S. Risk Management, LLC ("U.S. Risk")—to monitor air quality downwind of the Refinery.

8. George Coto ("Coto") took measurements on behalf of U.S. Risk from 8:25 p.m. to 11:50 p.m. on October 11, 2011.

9. Coto's monitoring device automatically recorded real-time measurements averaged over one-minute intervals. There is no location data for these measurements.

10. Coto also manually recorded air quality readings from his device at various intervals. Coto attempted to position himself beneath the plume and manually

note the air quality reading, and the time and location of each reading. The largest concentration of acid gas that Coto recorded occurred at 9:15 p.m. at the intersection of Asbury Church-Sullen and General Meyer. Coto recorded 1.5 parts per million ("PPM") of SO2 and 16 PPM of H2S. The next two measurements were taken at 9:25 p.m. and 9:35 p.m., and did not detect any H2S or SO2.

11. Of the 45 manual recordings taken by Coto, 34 did not detect *any* H2S or SO2. The recordings that did detect H2S and SO2 found concentrations significantly lower than those measured at 9:15 p.m.

12. In addition to U.S. Risk, there were two other sources of air monitoring in the vicinity of the Refinery.

13. The Vista Monitoring Station is operated by the Louisiana Department of Environmental Quality ("LDEQ") and located at 24 East Chalmette Circle, Chalmette, Louisiana. The Meraux Monitoring Station is also operated by the LDEQ and is located at 1100 East Judge Perez Drive, Chalmette, Louisiana. Neither of these stations recorded unusual amounts of H2S or SO2 during the Release.

II. The Bellwether Plaintiffs

14. The Bellwether Plaintiffs are Florine Shanley ("Shanley"), Stephanie Byes ("Byes"), James Graves ("Graves"), and Roanna Fleming ("Fleming").

15. Byes, Graves, and Fleming live downwind of the Refinery. Shanley lives upwind of the Refinery.

16. Byes, Fleming, and Shanley were inside their respective residences during the vast majority of the Release. Graves and his wife were barbecuing on their patio during the beginning of the Release.

17. No air measurements were taken at any of the Bellwether Plaintiffs' residences.

18. The Bellwether Plaintiffs testified at trial that they experienced various physical symptoms during and shortly after the Release. Some of those symptoms are generally known to be associated with exposure to H2S and/or SO2.

19. None of the Bellwether Plaintiffs sought medical treatment for the symptoms they experienced. Most of the symptoms subsided within 48 hours; none lasted long term.

III. Expert Testimony and Causation

20. Plaintiffs retained Russell F. Lee ("Lee") to model the directions and distances the H2S and SO2 emitted during the Release likely travelled. Lee primarily used the SLAB air modeling program to render his opinions. SLAB is a high-density gas model freely available for public use. Lee had never used SLAB before in his professional practice. Lee is familiar with lower-density models and believes this experience allows him to reliably apply the SLAB model.

21. The Court questioned Lee's qualifications during a lengthy *Daubert* hearing. The Court accepted Lee as an expert in meteorology with a specialty in air modeling but cautioned that his opinions would be given extra scrutiny, because this case was the first time he had used the SLAB model.

22. Lee's opinions regarding the downwind travel of H2S and SO2 are based on SLAB.

23. Lee's methodology can generally be divided into a series of steps. First, he input various numbers into SLAB, including information about H2S and SO2 (*e.g.*, molecular weight), emission rate during the Release, duration of the Release, wind speed and direction, and humidity. These inputs generated coordinates, which Lee then used to generate a series of contours that purport to show the location and concentration of H2S and SO2 emitted during the Release.

24. The contours are color-coded to reflect different possible concentrations of H2S and SO2. Lee testified that the contours do not identify the only places where the gases may have been present. Rather, H2S and SO2 could be found anywhere within the area shown at its furthest extremes by the tips of the contours. Lee described the contours as moving back and forth similar to the movement of windshield wipers.

25. The flaws in Lee's methodology quickly became apparent on cross examination. First, Lee could not identify which of his contour(s) was most accurate, nor could he identify precisely when those contour(s) would have existed. Second, Lee's SLAB modeling results did not account for the percentage of H2S and SO2 that traveled upwind.[1] Third, at least four of Lee's contours were based on wind directions calculated *before* the Release. He admits this was a mistake. Fourth, many of Lee's contours modeled concentrations of H2S and SO2 significantly higher than any reading recorded by U.S. Risk or taken at the other monitoring stations.

26. The shortcomings in Lee's downwind opinions were further exposed by Gale Hoffnagle, whom the Court accepted as an expert in the fields of meteorology, air

[1] Lee also testified the H2S and SO2 traveled upwind. Lee's upwind opinions are discussed below.

quality assessment, air monitoring, and air modeling. Unlike Lee, Hoffnagle is familiar with SLAB. Hoffnagle identified several problems with Lee's inputs in the SLAB model, including (1) the temperature of the outside air, (2) the mass source ray, (3) the source area, (4) the ambient measurement height, (5) the wind speed, and (6) the wind direction. Hoffnagle further opined that AERMOD would have been a more appropriate air model to use in this case. The Court finds Hoffnagle's testimony credible on these points.

27. Lee's opinions about the upwind travel of H2S and SO2 are even more problematic than his downwind opinions.

28. Lee's upwind opinions were not based on the SLAB model. Lee admitted there was a scientific methodology—"wind tunneling"—that could be used to model the movement of dense gases upwind. Lee did not use wind tunneling, because he felt it would be too costly and time consuming in this case.

29. Instead, Lee based his upwind opinions on a generic diagram provided by a colleague. According to Lee, the diagram reflects the general principle that dense gases can travel upwind. The gases depicted in the diagram, however, are not H2S and SO2.[2] Lee further acknowledged that the source of emission depicted in the diagram is not the Refinery.

30. As noted earlier, the Court held that because this matter was being tried before the bench, any issues with Lee's methodology would go to the weight of his testimony. The Court finds that Lee's downwind opinions carry no weight. Lee's lack of familiarity with and expertise in the SLAB model were obvious. Lee made

[2] Lee conceded on cross examination that the properties of a particular dense gas would affect its movement upwind.

several mistakes in his use of SLAB, which led to the modeling of air concentrations wholly inconsistent with the air monitoring data recorded on the ground.

31. Neither do Lee's upwind opinions carry any weight. The Court is at a loss as to how Lee can opine on the concentration of H2S and SO2 at Shanley's residence based almost exclusively on a diagram that models a different gas, emitted from a different location, during a different time period. The logical gaps in Lee's upwind opinion are substantial.

31. The Bellwether Plaintiffs also retained a toxicologist—Dr. Patricia Williams—to render opinions on general and specific causation. The Court accepted Dr. Williams as an expert in the field of toxicology.

32. Dr. Williams testified that exposure to H2S and SO2 at sufficient levels of concentration can be harmful. Using the exposure concentrations modeled by Lee, Dr. Williams opined that the Bellwether Plaintiffs' symptoms were likely caused by exposure to H2S and SO2.

33. For the reasons explained above, the Court does not give any weight to Lee's expert opinions. Dr. Williams relies exclusively on Lee's opinions for the Bellwether Plaintiffs' level of exposure. Because Lee's opinions carry no weight, neither do the opinions of Dr. Williams.

CONCLUSIONS OF LAW

1. Subject matter jurisdiction is proper under the Class Action Fairness Act, 28 U.S.C. § 1332(d).[3] Venue is proper, because a substantial part of the events or omissions giving rise to the claims occurred in the Eastern District of Louisiana.[4]

2. In this diversity case, the Court applies the substantive law of the forum state.[5] In determining that law, a diversity court looks to the final decisions of the state's highest court.[6]

3. In order to prevail in a Louisiana noxious emissions case,[7] a plaintiff must "prove[]through medical testimony that it was more probable than not that subsequent injuries were caused by the accident."[8] The Louisiana Supreme Court's decision in *Arabie v. Citgo Petroleum Corp.* provides guidance as to whether the Bellwether Plaintiffs have met this standard of proof.

4. In *Arabie*, 14 plaintiffs alleged various injuries from exposure to poisonous gases emanating from an oil spill.[9] The trial court award damages in favor of the plaintiffs.[10] One of the questions on appeal was whether the plaintiffs had established causation under the more-probable-than-not standard.[11] The Louisiana Supreme Court found that "substantial evidence" supported the trial court's determination that the injuries were more probably not than not caused

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[3] *See generally* R. Doc. 124.
[4] *See* 28 U.S.C. § 1391(b)(2).
[5] *Johnston & Johnston v. Conseco Life Ins. Co.*, 732 F.3d 555, 562 (5th Cir. 2013).
[6] *Graper v. Mid-Continent Cas. Co.*, 756 F.3d 388, 391 (5th Cir. 2014).
[7] Civil Code Article 2315 is the "fountainhead" of Louisiana tort law. *Trizec Props., Inc. v. U.S. Mineral Prods. Co.*, 974 F.2d 602, 606 (5th Cir. 1992). In order to recover damages in a Louisiana negligence action, the plaintiff must prove "his injuries, more probably than not, were caused by the negligence of the particular defendant." *Hanks v. Entergy Corp.*, 944 So. 2d 564, 578 (La. 2006).
[8] *Arabie v. CITCO Petroleum Corp.*, 89 So. 3d 307, 321 (La. 2012).
[9] *Id.*
[10] *Id.* at 311.
[11] *See id.* at 320—21.

by exposure to the slop oil.[12] The evidence presented at trial included (1) an MSDS from the defendant listing the hazardous chemicals in the slop oil and the physical symptoms associated with inhalation; (2) testimony from the plaintiffs that they experienced "contemporaneous or near-contemporaneous symptoms" when exposed to the odors and fumes from the oil spill; (3) testimony from experts in "toxicology, air dispersion modeling, environmental chemistry, exposure monitoring, odor, industrial hygiene, epidemiology, and occupational and environmental medicine;" and (4) medical records from the plaintiffs' treating physicians.[13]

5. Unlike *Arabie*, the plaintiffs in this case did not present any credible expert testimony—medical or otherwise—in support of causation.[14] The Bellwether Plaintiffs' air modeling expert has been completely discredited. Their toxicologist relied on flawed air modeling results, thereby eliminating the reliability of her testimony.

6. Without expert testimony, the Bellwether Plaintiffs are left with their own testimony of physical symptoms temporally related to the Release, the citizen complaints received by the Refinery and the St. Bernard Parish Fire Department, and the MSDS's provided by Chalmette Refining. This evidence is, by itself, insufficient to establish causation under the more-probable-than-not standard.[15]

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[12] *Id*. at 322.
[13] *Id*. at 321—22.
[14] Although the Louisiana Supreme Court initially framed the causation inquiry in terms of sufficient "medical testimony," *id*. at 321, the Court also noted the importance of non-medical expert testimony, such as air monitoring and air modeling. *See id*. at 321—22.
[15] Chalmette Refining argues that in order to establish causation, the Bellwether Plaintiffs were required to prove exposure through scientific evidence such as air modeling. The Court need not address this issue, because the Bellwether Plaintiffs have not presented *any* expert testimony in support of causation. Nonetheless, the Court notes that the Louisiana Supreme has held that air monitoring data is not necessary when there is other "substantial evidence" to support causation. *Id*. at 322.

CONCLUSION

The Bellwether Plaintiffs did not establish causation. Their claims are DISMISSED WITH PREJUDICE.

New Orleans, Louisiana, this 2nd day of December, 2014.

SUSIE MORGAN
UNITED STATES DISTRICT JUDGE