

IN THE SUPREME COURT OF MISSISSIPPI

NO. 2006-CA-01128-SCT

MILTON CECIL WATTS

v.

***RADIATOR SPECIALTY COMPANY AND
UNITED STATES STEEL CORPORATION***

DATE OF JUDGMENT:	06/09/2006
TRIAL JUDGE:	HON. ROBERT G. EVANS
COURT FROM WHICH APPEALED:	SMITH COUNTY CIRCUIT COURT
ATTORNEYS FOR APPELLANT:	EUGENE COURSEY TULLOS LOUIS H. WATSON, JR. DARYL L. MOORE LANCE H. LUBEL J. ROBERT BLACK
ATTORNEYS FOR APPELLEES:	S. LEANNA BANKESTER JOE E. BASENBERG GEORGE M. WALKER RANCE N. ULMER JAMES M. RILEY, JR. STEPHEN L. THOMAS MARY CLAY W. MORGAN FRED KRUTZ PHILLIP S. SYKES JAMES WILLIAM MANUEL
NATURE OF THE CASE:	CIVIL - PERSONAL INJURY
DISPOSITION:	AFFIRMED - 06/12/2008
MOTION FOR REHEARING FILED:	
MANDATE ISSUED:	

BEFORE WALLER, P.J., CARLSON AND LAMAR, JJ.

LAMAR, JUSTICE, FOR THE COURT:

¶1. This case comes before the Court on appeal from the Circuit Court of Smith County. Following a trial in which the jury returned a verdict for the plaintiff, Circuit Judge Robert G. Evans granted the defendants' motion for judgment notwithstanding the verdict (JNOV) after finding that the testimony of the plaintiff's expert on the issue of causation should have been excluded as scientifically unreliable. The trial court entered an order dismissing the plaintiff's case with prejudice, and the plaintiff appeals.

FACTS

¶2. Plaintiff Milton C. Watts was diagnosed with small-cell lymphocytic lymphoma, a subtype of non-Hodgkin's lymphoma in 1999.¹ At the time of trial, Watts was 72 years old. Beginning in 1947, and throughout much of his career, Watts used a product called Liquid Wrench which was manufactured by Defendant Radiator Specialty Company.² Liquid Wrench was made with a solvent called raffinate which contained benzene. The benzene-containing raffinate used by Radiator Specialty to manufacture Liquid Wrench was produced by Defendant U.S. Steel Corporation.³

¹ According to testimony, there are at least twenty-five different types of non-Hodgkin's lymphoma.

² Liquid Wrench is a liquid solvent used for cleaning tools and engine parts and loosening nuts and bolts. At the time Watts began using Liquid Wrench, it was one of the only products of its kind on the market.

³ It is undisputed that Liquid Wrench contained raffinate produced by U.S. Steel from 1960 through 1978. Plaintiff alleges that Radiator Specialty used U.S. Steel raffinate as early as 1941. However, it is Defendants' contention that U.S. Steel's raffinate was sold to Radiator Specialty only from 1960 through 1978. It is the further contention of Radiator Specialty that no one knows the formula used to produce Liquid Wrench in the 1940s and

¶3. Watts first used Liquid Wrench while in vocational school in 1947. Watts testified that between 1953 and 1961, that he used Liquid Wrench one to five times per day while working odd jobs as a mechanic. There were times, Watts testified, where he would have to clean parts for hours at a time in a room with no ventilation. Watts began working on locomotives for a company called Masonite in 1970, and he continued to work there until his retirement in 1996. He used Liquid Wrench consistently while working on the locomotives.

¶4. It is Watts's contention that his lymphoma was caused by his exposure to the benzene-containing raffinate in Liquid Wrench. It is undisputed that benzene can cause serious health problems in individuals who are exposed to it. However, the defendants contend that there is no evidence of a link between benzene exposure and small-cell lymphocytic lymphoma. The defendants claim that Dr. Barry Levy, Plaintiff's medical expert on causation, "is the only medical doctor who believes that a demonstrable causal association exists between benzene exposure and [non-Hodgkin's lymphoma]."

COURSE OF PROCEEDINGS

¶5. Watts filed his complaint against Radiator Specialty and U.S. Steel in the Circuit Court of Smith County on October 11, 2002. The defendants each moved for summary judgment, but it was denied by the trial court. The defendants also moved to have the plaintiff's medical expert, Dr. Barry Levy, disqualified. This motion was renewed at trial

1950s, nor is it known whether that formula included a benzene-containing agent. The period from 1960-1978 is the only time when it is undisputed that Liquid Wrench did contain benzene.

and was denied by the trial judge, who allowed Levy to be qualified as an expert in epidemiology and occupational medicine.

¶6. The trial began on November 8, 2004, and the jury returned a verdict for Watts in the amount of \$2 million.⁴ Following entry of the judgement on March 9, 2005, defendants made a motion for JNOV (or, in the alternative, a new trial) claiming, *inter alia*, that the trial court had erred in admitting the testimony of Dr. Levy as to causation. After briefing and argument on the motion, the trial court agreed that Dr. Levy's causation testimony was scientifically unreliable. In particular, the trial court found that "neither the cohort studies nor the case control studies relied upon by Dr. Levy at trial supported his opinion that a causal connection exists between benzene exposure and non-Hodgkin's lymphoma." The court entered an order granting the defendants' motion for JNOV and conditionally granting the defendants a new trial should this Court reverse the grant of JNOV. The trial court entered a judgment of dismissal with prejudice, and this appeal followed.

ANALYSIS

I. The trial court's exclusion of Dr. Levy's testimony

¶7. "When reviewing a trial court's decision to allow or disallow evidence, including expert testimony, we apply an abuse of discretion standard." *Canadian Nat'l/III. Cent. R.R. v. Hall*, 953 So. 2d 1084, 1094 (Miss. 2007). Unless this Court concludes that a trial court's

⁴ The jury found that Radiator Specialty was forty percent at fault and U.S. Steel was forty-five percent at fault, with the remaining fifteen percent of fault attributed to Watts's former employers.

decision to admit or exclude evidence was arbitrary and clearly erroneous, that decision will stand. *Irby v. Travis*, 935 So. 2d 884, 912 (Miss. 2006). Under Mississippi Rule of Evidence 702, trial courts are charged with being gatekeepers in evaluating the admissibility of expert testimony. *Id.* “We are confident that our learned trial judges can and will properly assume the role as gatekeeper on questions of admissibility of expert testimony.” *Miss. Transp. Comm'n v. McLemore*, 863 So. 2d 31, 40 (Miss. 2003). Mississippi Rule of Evidence 702 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) their 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.

This rule makes it necessary for a trial court to apply a two-pronged inquiry when evaluating the admissibility of expert testimony: (1) is the witness qualified, and (2) is the testimony relevant and reliable? *McLemore*, 863 So. 2d at 35.⁵ There is no dispute that Dr. Levy was properly qualified as an expert in epidemiology and occupational medicine. Thus, the admissibility of Dr. Levy’s causation testimony turns on its reliability and its relevance.

⁵ In *McLemore*, this Court adopted the standard prescribed by the U.S. Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993).

¶8. Dr. Levy testified as to general causation (that benzene causes non-Hodgkin's lymphoma) and specific causation (that benzene-containing Liquid Wrench caused Mr. Watts's non-Hodgkin's lymphoma). The methodology used in forming his opinion as to general causation was the review of eighteen case studies done by different researchers between 1979 and 2004.⁶ While the defendants do not challenge this methodology, they do challenge the reliability and relevance of the case studies Dr. Levy relied upon.

¶9. While case-study review is certainly an accepted methodology, trial courts still must be certain that the content of those case studies is relevant to the facts at hand. A review of the case studies supports the trial court's finding that Dr. Levy's testimony as to the content of the studies and their relevance to the facts of this case could easily have misled the jury. This Court recently spoke to the danger of unreliable expert testimony and the effect that it can have on the decision-making process of a juror.

Juries are often in awe of expert witnesses because, when the expert witness is qualified by the court, they hear impressive lists of honors, education and experience. An expert witness has more experience and knowledge in a certain area than the average person. Therefore, juries usually place greater weight on the testimony of an expert witness than that of a lay witness.

⁶ The case studies consisted of nine "cohort" studies and nine "case-control" studies. Cohort studies identify and study a group of people exposed to a certain element as compared to another group not exposed to the element to see if there is a higher incidence of certain diseases in the group exposed to the element. Case-control studies identify and study a group of people who have a certain disease as compared to a group of people who do not have that disease to see if there is a higher incidence of exposure to a certain element in the past in the group that has the disease. For example, a cohort study would study a group of people who were exposed to benzene to see if they contracted non-Hodgkin's lymphoma, while a case-control study would study a group of people with non-Hodgkin's lymphoma to see if they had been exposed to benzene.

Edmonds v. State, 955 So. 2d 787, 792 (Miss. 2007). Being no exception, Dr. Levy's testimony about his education and experience covered five pages of transcript. This included his testimony that he attended Tufts College in Boston and Cornell Medical School in New York, and that he obtained a master's degree in public health from the Harvard School of Public Health. Because of the weight that is given to expert testimony, it is imperative that trial judges remain steadfast in their role as gatekeepers under the *Daubert* standard.

¶10. In striking Dr. Levy's causation testimony, the trial court specifically cited Radiator Specialty's brief supporting the motion for JNOV. In that brief, Radiator Specialty reviewed each of the eighteen case studies and criticized Dr. Levy's reliance upon them.⁷ Of the eighteen studies Dr. Levy cited, he testified that only half showed a statistically significant increase in risk due to benzene exposure. None of the studies specifically looked at the possible risks associated with use of Liquid Wrench. None specifically studied the risks of development of non-Hodgkin's lymphoma in mechanics, Watts's profession.⁸ One of the studies suggested that the reported increase in risk of non-Hodgkin's lymphoma was not occupationally related. Another of the studies, which included a review of other studies, reported no significant increase in risk of non-Hodgkin's lymphoma due to benzene

⁷ Each of the studies was attached as an exhibit to Radiator Specialty's motion. The studies were not provided to the jury.

⁸ The studied occupations included oil refinery workers, gas station attendants, general chemical workers, and seamen on tankers.

exposure. Several of the studies did not provide a dose-response ratio.⁹ Finally, not one study concluded that there is a causal link between benzene exposure and non-Hodgkin's lymphoma. In fact, one of the authors of a study relied upon by Dr. Levy testified that there was no legitimate basis to conclude that there is a link between benzene exposure, much less Liquid Wrench, and non-Hodgkin's lymphomas.¹⁰

¶11. These facts call into question the reliability and relevance of the studies upon which Dr. Levy based his conclusion that Liquid Wrench caused Watts's small-cell lymphocytic lymphoma. None of these studies provide a basis for the conclusion that there is a causal connection between benzene exposure and non-Hodgkin's lymphoma, much less small-cell lymphocytic lymphoma, the particular type from which Watts suffers.

¶12. Relevance, as defined by our standard for admitting expert testimony, depends upon whether the reasoning or methodology employed by the expert witness may be properly applied to the facts at hand. *Daubert*, 509 U. S. at 593. Dr. Levy's testimony gave very little detail, if any, as to the specific findings of each case study and glossed over many of the findings. All that was provided to the jury were two pages which listed the author of each study, the year of the study, a one-or-two word description of the test subjects, and a number

⁹ A dose-response ratio is needed to indicate the level of exposure to benzene of the subjects of the study. This information is crucial under the case-study methodology to show specific causation so that Watts's level of exposure could be specifically compared to subjects with similar exposure.

¹⁰ Dr. Philip Cole, co-author of the Delzell study, testified as the defendants' expert witness.

signifying the increased risk due to exposure. Based on this evidence and Dr. Levy's testimony, we cannot say that the trial court abused its discretion in excluding Dr. Levy's testimony.

¶13. The dissent disagrees with this conclusion, arguing that the trial court abused its discretion in excluding Dr. Levy's testimony. Specifically, the dissent takes issue with our pointing out that none of the studies concludes that there is a link between benzene exposure and non-Hodgkin's lymphoma. In support of its argument, the dissent cites ***Knight v. Kirby Inland Marine Inc.***, which stated, "in epidemiology hardly any study is ever conclusive, and we do not suggest that an expert must back his or her opinion with published studies that unequivocally support his or her conclusions."¹¹ At no point do we suggest that experts must rely on studies that explicitly support their testimony. The fact that not one of the studies relied upon by Dr. Levy finds a conclusive link between benzene exposure and non-Hodgkin's lymphoma is just one of the many problems with the studies cited by the trial court.

¶14. For example, the dissent specifically points readers to the Hayes study and its assertion that benzene-exposed workers are four times more likely to develop non-Hodgkin's lymphoma.¹² The Hayes study itself points out that its findings with regard to non-Hodgkin's

¹¹ 482 F.3d 347, 354 (5th Cir. 2007). What the dissent fails to point out about the ***Knight*** decision is that it actually affirmed a trial court's decision to exclude expert testimony based upon the weakness of the studies on which the expert relied. *Id.* at 355.

¹² It should be noted that the Hayes study is the only study that found anything more than a borderline association between benzene exposure and non-Hodgkin's lymphoma.

lymphoma are not statistically significant. Richard B. Hayes, et al., *Benzene and the Dose-Related Incidence of Hematologic Neoplasms in China*, J. Nat'l Cancer Inst., July 16, 1997, 1065-1071. Further, the article admits that the notably higher risk of non-Hodgkin's lymphoma was found among chemical workers who were exposed to a number of chemicals other than benzene and that the "observed risks could be due to some other exposures." *Id.* at 1070.

¶15. Curiously, the dissent points to this quote from the Hayes study, which makes our point even clearer:

As in most industrial settings, the workers in this investigation were likely exposed to a number of chemicals other than benzene and the observed risks could be due to some other exposures. However, the subjects in this study were employed in a variety of occupations, and excesses of hematologic disease were not restricted to a particular subset of benzene-related occupations, with the possible exception of the notably higher risks for NHL among chemical workers. This observation suggests that *the effects are more likely due to the common exposure to benzene than due to other exposures.*

(Emphasis added by dissent). In this passage, the authors of the study are simply pointing out that the increased risk for non-Hodgkin's lymphoma was found among general chemical workers while the other hematologic diseases analyzed in the study¹³ were not restricted to any particular occupation. The observation that the *other* blood disorders were not restricted to any particular occupation suggests that the common exposure to benzene was the cause. The quote specifically excludes non-Hodgkin's lymphoma from this finding. This is a

¹³ Namely, these other hematologic diseases are acute non-lymphocytic leukemia, myelodysplastic syndromes, and other leukemias.

common theme among the eighteen studies involved here. While the dissent claims that “all eighteen of the studies found some correlation between benzene exposure and non-Hodgkin’s lymphoma,” it must be noted that these studies involve exposures to solvents or chemicals other than just benzene. In fact, the Massoudi study analyzes “chemical exposure” in general, and never even refers to benzene exposure. Barbara L. Massoudi, et al., *A Case-Control Study of Hematopoietic and Lymphoid Neoplasms: The Role of Work in the Chemical Industry*, Am. J. Indus. Med., 1997, 31:21-27.

¶16. The United States Supreme Court has provided guidance for courts dealing with issues like the one presently before this Court. In *Joiner v. General Electric Co.*, 78 F.3d 524 (11th Cir. 1996), the United States Court of Appeals for the Eleventh Circuit reversed a decision of the District Court for the Northern District of Georgia to exclude an expert’s testimony because the studies on which the expert relied were not sufficient to support the expert’s testimony. General Electric, the defendant in the litigation, petitioned the Supreme Court for writ of certiorari. The Supreme Court granted General Electric’s petition and adopted the abuse-of-discretion standard for *Daubert* issues arising on appeal. *General Electric Co. v. Joiner*, 522 U.S. 136; 118 S. Ct. 512; 139 L. Ed. 2d 508 (1997).

¶17. Arguing that the district court had abused its discretion, Joiner pointed the Supreme Court to its own language in *Daubert* stating that the focus of trial courts during *Daubert* analysis “must be solely on the principles and methodology, not on the conclusions that they generate.” *Id.* at 146 (quoting *Daubert*, 509 U.S. at 595). The Court responded,

But conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which 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.

Id. The Court reversed the Eleventh Circuit and reinstated the district court's ruling, stating that the district court had not abused its discretion in finding that the analytical gap between the data in the studies and the opinion proffered by the expert was simply too great.

¶18. The dissent also makes the assertion that this Court's decision will effectively resurrect the *Frye* standard requiring an expert's opinion to be generally accepted in the scientific community. *Frye v. United States*, 54 App. D.C. 46, 47, 293 F. 1013, 1014 (1923). Quite to the contrary, this case is a perfect example of how courts should apply *Daubert* and its progeny. "The *Daubert* standard ensures that proffered evidence is both 'reliable' and 'relevant.'" *Knight*, 482 F.3d at 352 (citing *Daubert*, 509 U.S. at 589). This Court has recognized the reliability requirement under *Daubert*.

The Court in *Daubert* adopted a non-exhaustive, illustrative list of reliability factors for determining the admissibility of expert witness testimony. The focus of this analysis "must be solely on principles and methodology, not on the conclusions they generate." These factors include whether the theory or technique can be and has been tested; whether it has been subjected to peer review and publication; whether, in respect to a particular technique, there is a high known or potential rate of error; whether there are standards controlling the technique's operation; and *whether the theory or technique enjoys general acceptance within a relevant scientific community*. The applicability of these factors depends on the nature of the issue, the expert's particular expertise, and the subject of the testimony.

McLemore, 863 So. 2d at 36-37 (internal citations omitted) (emphasis added). While certainly there is no requirement that an expert’s opinion be “generally accepted in the scientific community” as under the *Frye* standard, it is a factor for trial courts to consider. This factor was properly considered by the trial court. When this Court adopted the *Daubert* standard, it did not “lower the bar” for admittance of expert testimony. We simply recognized that our learned trial judges are in the best position to make the determination. We made them the gatekeepers of expert testimony, not the doormen.

¶19. There can be no doubt that there does exist in this instance a gap such as the one of which the Supreme Court spoke in *Joiner*. On one side of that gap is a collection of studies which is, in the dissent’s own words, “to be sure, not particularly strong.” On the other side is Dr. Levy’s assertion that “to a reasonable degree of medical certainty” Watts’s non-Hodgkin’s lymphoma was caused by his exposure to Liquid Wrench. The leap across the chasm from the data in the studies to Dr. Levy’s proffered opinion was more than the trial court could allow, and this Court cannot say that the ruling amounted to an abuse of discretion.

¶20. In addition to non-Hodgkin’s lymphoma, Watts also suffers from the blood disease pancytopenia.¹⁴ At trial, Dr. Levy testified that pancytopenia can be caused by exposure to benzene. Watts contends that if the exclusion of Dr. Levy’s testimony as to non-Hodgkin’s lymphoma is upheld, Dr. Levy’s testimony that benzene causes pancytopenia should stand

¹⁴ Pancytopenia is a precursor to non-Hodgkin’s lymphoma.

to support the jury's verdict. Watts's argument is flawed. It was not just Dr. Levy's non-Hodgkin's lymphoma testimony that was stricken. Dr. Levy's testimony was stricken in its entirety. Just as none of the studies relied upon by Dr. Levy supports his testimony that benzene exposure causes non-Hodgkin's lymphoma, none supports his testimony that benzene exposure causes pancytopenia. Further, all of Watts's evidence as to damages regarded his non-Hodgkin's lymphoma, and Watts did not even discuss his pancytopenia on the stand. Watts's argument regarding pancytopenia is without merit.

II. The trial court's grant of JNOV

¶21. Our standard of review for a trial court's grant of a motion for judgment notwithstanding the verdict is de novo. *White v. Stewman*, 932 So. 2d 27, 32 (Miss. 2006). "The motion for [JNOV] tests the legal sufficiency of the evidence supporting the verdict. It asks the Court to hold, as a matter of law, that the verdict may not stand." *Jesco, Inc. v. Whitehead*, 451 So. 2d 706, 713 (Miss. 1984) (Robertson, J., specially concurring).

¶22. The trial court granted the defendants' motion for JNOV upon striking Dr. Levy's testimony. In support of this ruling, the trial court stated:

Because the testimony of Dr. Levy should have been excluded, and since Plaintiff did not offer any other evidence of either general or specific causation, the Court is now obligated to grant Defendants' motions for judgment notwithstanding the verdict of the jury in this case.

¶23. We have held that it was not an abuse of discretion for the trial court to strike Dr. Levy's testimony. As that testimony was the only evidence Watts presented as to causation, the trial court's grant of JNOV was proper.

CONCLUSION

¶24. For the foregoing reasons, the judgment of the trial court is affirmed.

¶25. **AFFIRMED.**

SMITH, C.J., WALLER, P.J., CARLSON AND DICKINSON, JJ., CONCUR. DIAZ, P.J., DISSENTS WITH SEPARATE WRITTEN OPINION JOINED BY EASLEY AND GRAVES, JJ. RANDOLPH, J., NOT PARTICIPATING.

DIAZ, PRESIDING JUSTICE, DISSENTING:

¶26. I find that Dr. Levy's testimony is clearly admissible under Mississippi Rule of Evidence 702 and thus that the trial court abused its discretion in striking his testimony. Based on that finding, I conclude that the trial court erred in granting the defendants' motion for judgment notwithstanding the verdict. Accordingly, I cannot join the majority opinion.

¶27. Regarding the admissibility of Dr. Levy's testimony about general causation, the sole issue is whether his testimony is reliable.¹⁵ "Reliability . . . is part of an inquiry under Rule 702, which is unquestionably flexible." *Poole ex rel. Poole v. Avara*, 908 So. 2d 716, 723 (Miss. 2005) (citing *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 594, 113 S.Ct. 2786, 2797, 125 L.Ed.2d 469 (1993)). "[T]he requirement that an expert's testimony pertain to "scientific knowledge" establishes a standard of evidentiary reliability." *Howard v. State*, 853 So. 2d 781, 804 (Miss. 2003) (quoting *Daubert*, 509 U.S. at 590, 113 S.Ct. at

¹⁵Levy's testimony is certainly relevant, since it pertained to the link between exposure to benzene and non-Hodgkin's lymphoma. See *Poole ex rel. Poole v. Avara*, 908 So. 2d 716, 723 (Miss. 2005) ("Relevance of expert testimony means it will, according to the Rule, assist the trier of fact.") (citing *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 591, 113 S.Ct. 2786, 2795, 125 L.Ed.2d 469 (1993)). Indeed, the defendants do not dispute its relevance; they merely assert that the case studies do not support Levy's general causation testimony, and thus it is unreliable.

2795). “Scientific ‘implies a grounding in the methods and procedures of science.’” *Id.* “Knowledge ‘connotes more than subjective belief or unsupported speculation.’” *Id.* ““Proposed testimony must be supported by appropriate validation - - i.e., “good grounds,” based on what is known.”” *Id.* In other words, in order to be admissible, Dr. Levy’s testimony about general causation must be “based on sufficient facts or data” M.R.E. 702. Accordingly, the question before this Court is whether the trial court abused its discretion by ruling that the eighteen epidemiological case studies reviewed by Dr. Levy did not provide adequate support for his opinion that there is a causal connection between exposure to benzene and the development of non-Hodgkin’s lymphoma.

¶28. Of the eighteen epidemiological studies upon which Dr. Levy relied, nine concluded that exposure to benzene was more likely than not the cause of the type of non-Hodgkin’s lymphoma developed by the individuals studied.¹⁶ One of these nine studies, the Hayes study, was conducted by the National Cancer Institute, which is part of the National Institutes of Health. The Hayes study (a cohort study conducted in China) involved almost 75,000 workers in many different occupations who had been exposed to benzene and a control group of more than 30,000 people who had not been exposed to benzene. The study found that workers who had been exposed to benzene for more than ten years were four times as likely to be afflicted with some form of non-Hodgkin’s lymphoma than people who had not been exposed to

¹⁶ “The threshold for concluding that an agent was more likely than not the cause of an individual’s disease is a relative risk greater than 2.0.” Federal Judicial Center, *Reference Manual on Scientific Evidence*, p. 384 (2d ed. 2000). These nine studies found a relative risk of more than 2.0 for non-Hodgkin’s lymphoma. Two other studies cited by Dr. Levy found a relative risk of exactly 2.0.

benzene. The majority correctly notes that the authors of the Hayes study acknowledged that the findings with respect to non-Hodgkin's lymphoma were not "statistically significant." But the majority does not explain the meaning of "statistically significant." A result is considered to be statistically significant when there is only a five percent probability or less that it is attributable to mere chance. *E.g. Ottaviani v. State Univ. of N.Y.*, 875 F.2d 365, 371 (2nd Cir. 1989) ("A finding of two standard deviations corresponds approximately to a one in twenty, or five percent, chance that a disparity is merely a random deviation from the norm, and most social scientists accept two standard deviations as a threshold level of statistical significance.") (internal quotation marks and citations omitted). I do not see how one can conclude that the Hayes study provides no support for Dr. Levy's testimony on the basis that its authors were not ninety-five percent confident that the increased incidence of non-Hodgkin's lymphoma among workers exposed to benzene was not "a random deviation from the norm." The majority also argues that the Hayes study does not support Dr. Levy's testimony regarding general causation because the workers studied were exposed to chemicals other than benzene. However, the majority fails to point out that, after noting this problem, the authors of the study concluded that the exposure to benzene was the most likely cause of the diseases developed by the subjects of the study:

As in most industrial settings, the workers in this investigation were likely exposed to a number of chemicals other than benzene and the observed risks could be due to some other exposures. However, the subjects in this study were employed in a variety of occupations, and excesses of hematologic disease were not restricted to a particular subset of benzene-related occupations, with the possible exception of the notably higher risks for NHL among chemical workers. This observation suggests that *the effects are more likely due to the common exposure to benzene than due to other exposures.*

Richard B. Hayes, et al., *Benzene and the Dose-Related Incidence of Hematologic Neoplasms in China*, J. Nat'l Cancer Inst., July 16, 1997, 1065-1071, p. 1070 (emphasis added).¹⁷

¶29. The majority misleadingly states that “not one study concluded that there is a causal link between benzene exposure and non-Hodgkin’s lymphoma.” While it is true that none of the studies found a *direct* causal connection between benzene exposure and non-Hodgkin’s lymphoma, it is undisputed that all eighteen of the studies found some correlation between benzene exposure and non-Hodgkin’s lymphoma. That none of the studies relied upon by Dr. Levy concluded that benzene exposure was *the* cause of the type of non-Hodgkin’s lymphoma developed by the subjects of the study does not render Levy’s testimony unreliable. See *Poole*, 908 So. 2d at 723-24 (“Requiring that the subject of expert testimony be known to a certainty is not necessary either, however, because, as the *Daubert* Court pointed out, ‘there are no certainties in science.’”) (quoting *Daubert*, 509 U.S. at 590, 113 S.Ct. at 2795); *Knight v. Kirby Inland Marine, Inc.*, 482 F.3d 347, 351(5th Cir. 2007) (“[I]n epidemiology hardly any study is ever conclusive, and we do not suggest that an expert must back his or her opinion with published studies that unequivocally support his or her conclusions.”) (citations omitted); *Bonner v. ISP Technologies, Inc.*, 259 F.3d 924, 929 (8th Cir. 2001) (“[T]here is no requirement that published epidemiological studies supporting an expert's opinion exist in order for the opinion to be admissible.”) (citation omitted). Moreover, Dr. Levy’s testimony

¹⁷The majority’s assertion that this “quote specifically excludes non-Hodgkin’s lymphoma from this finding” is incorrect. It excludes chemical workers who developed non-Hodgkin’s lymphoma, but not workers in other fields who also developed non-Hodgkin’s lymphoma. The study found an increased risk for non-Hodgkin’s lymphoma “among several occupational groups,” not just chemical workers.

cannot be deemed unreliable based on the fact that none of the studies upon which he relied looked at the risk of developing non-Hodgkin's lymphoma associated with the use of Liquid Wrench or the prevalence of non-Hodgkin's lymphoma among mechanics – no such studies have been conducted.

¶30. Accordingly, I conclude that the studies clearly provide “good grounds” for Dr. Levy’s opinion and thus that the trial court abused its discretion by ruling that his testimony regarding general causation is unreliable. *See, e.g., In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 746 (3rd. Cir 1994) (holding that “[t]he judge should only exclude the evidence if the flaw is large enough that the expert lacks good grounds for his or her conclusions”) (internal quotation marks and citations omitted); *Hose v. Chicago Nw. Transp. Co.*, 70 F.3d 968, 974 (8th Cir. 1995) (“Only if an expert's opinion is so fundamentally unsupported that it can offer no assistance to the jury must such testimony be excluded.”) (internal citations and quotation marks omitted). The support provided by these studies is, to be sure, not particularly strong; however, the strength of that support goes to the weight, not the admissibility, of Dr. Levy’s testimony. *See, e.g., Poole*, 908 So. 2d at 724 (“Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.”) (quoting *Daubert*, 509 U.S. at 596, 113 S.Ct. at 2798); *Hose*, 70 F.3d at 974 (“As a general rule, the factual basis of an expert opinion goes to the credibility of the testimony, not the admissibility, and it is up to the opposing party to examine the factual basis for the opinion in cross-examination.”). The defendants were given an opportunity to cross-examine Dr. Levy on the scientific basis for

his opinion that exposure to benzene can cause non-Hodgkin's lymphoma; they were, moreover, allowed to call their own expert to rebut Dr. Levy's testimony.¹⁸ The question of whether the epidemiological studies relied upon by Dr. Levy established a connection between exposure to benzene and non-Hodgkin's lymphoma was for the jury to answer. Therefore, I find that the trial court abused its discretion by striking Dr. Levy's testimony regarding general causation.

¶31. The holding in today's case that the trial court did not abuse its discretion by ruling that Dr. Levy's testimony is inadmissible, despite the fact that he cited eighteen scientific studies supporting his opinion, effectively resurrects the *Frye* standard – which required that an expert's opinion or theory be “general accepted” – that this Court discarded several years ago in favor of the *Daubert* standard. *Miss. Transp. Comm'n v. McLemore*, 863 So. 2d 31, 39-40 (Miss. 2003). The crux of the defendants' argument about the unreliability of Dr. Levy's testimony regarding general causation is that the epidemiological studies he relied on did not generally find that exposure to benzene significantly increases the risk of developing non-Hodgkin's lymphoma.¹⁹ It certainly is true that *most* of the studies cited by Dr. Levy did not show a significant increase in the risk of developing non-Hodgkin's lymphoma from exposure

¹⁸The defendant's expert, Dr. Philip Cole, admitted that benzene is a carcinogen and that experimental studies have been conducted and have found it to cause lymphomas in mice and rats. In fact, Cole acknowledged his involvement in a study commissioned by the Union Oil Company that found an “elevated relative risk” of non-Hodgkin's lymphoma among oil and gas division workers.

¹⁹Radiator Specialty asserts in its brief that “the studies relied upon by Dr. Levy *generally* did not find a relative risk or odds ratio of 2.0, and/or were not statistically significant.” (emphasis added).

to benzene. But several of them did show such an increase. If the support of several epidemiological studies is insufficient to render an expert's opinion admissible, then, in my view, we are requiring that such an opinion be generally accepted in order for it to be admissible.²⁰ If such a standard is going to be applied, then many expert witnesses who must rely on epidemiological studies will be prevented from testifying, even though their testimony is based on scientifically valid evidence.

¶32. We have claimed that we are committed to ““permitt[ing] [experts] wide latitude to offer opinions, including those that are not based on firsthand knowledge or observation,”” *Miss. Dep’t of Mental Health v. Hall*, 936 So. 2d 917, 928 (Miss. 2006) (quoting *Daubert*, 509 U.S. at 592, 113 S.Ct. at 2796). We have also frequently remarked upon the “liberal thrust” of our rules of evidence. *Poole*, 908 So. 2d at 724. I do not see how one can reconcile the striking of Dr. Levy’s testimony with those principles.

¶33. As for Dr. Levy’s testimony about specific causation, I find that it is also reliable. To determine whether Watts’s exposure to Liquid Wrench specifically caused him to develop small-cell lymphocytic lymphoma, Levy first reviewed the deposition of Frank Parker, who estimated the level of Watts’s exposure to benzene. After reviewing Parker’s estimates, Levy concluded that Watts’s exposure to benzene through his use of Liquid Wrench resulted in a significant increase in his risk of developing some form of non-Hodgkin’s lymphoma. Second, Levy considered other possible causes of Watts’s lymphoma: (1) immunosuppressant

²⁰In my view, one supporting study (provided that it is from a reputable source, of course) ought to be considered sufficient to meet the admissibility standard.

drugs, (2) immunosuppressant disease, (3) smoking, (4) chemotherapy, and (5) genetics. After reviewing Watts’s personal and medical history, Levy ruled out of all of these alternative causes and concluded that it was his opinion that “to a reasonable degree of medical and scientific probability benzene caused Mr. Watts’s non-Hodgkin’s lymphoma.” Clearly, Levy’s testimony is supported by “sufficient facts and data.” M.R.E. 702. Further, because he used a scientifically valid methodology known as “differential diagnosis,”²¹ his testimony is “the product of reliable principles and methods.” *Id.*; see, e.g., ***Kennedy v. Collagen Corp.***, 161 F.3d 1226, 1228-30 (9th Cir. 1998) (holding that expert opinion on causation based on reliable differential diagnosis passes ***Daubert*** muster). Finally, I find that Levy “applied the principles and methods reliably to the facts of the case.” *Id.* Therefore, I conclude that the trial court also abused its discretion by striking this portion of Levy’s testimony.

¶34. The only ground on which the trial court granted judgment notwithstanding the verdict was that Watts had presented no expert testimony regarding causation. If Levy’s testimony is not stricken, “there is evidence of such quality and weight that reasonable and fairminded jurors in the exercise of impartial judgment might reach different conclusions” regarding the issue of causation. ***Ferguson v. Snell***, 905 So. 2d 516, 520 (Miss. 2004) (citation omitted).

²¹Differential diagnosis is “a process whereby medical doctors experienced in diagnostic techniques provide testimony countering other possible causes . . . of the injuries at issue.” ***Hines v. Consol. Rail Corp.***, 926 F.2d 262, 270 (3rd Cir. 1991) (citation omitted).

Therefore, I would hold that the trial court erred by granting the defendants' motion for judgment notwithstanding the verdict.²²

¶35. For these reasons, I would reverse and render. I dissent.

EASLEY AND GRAVES, JJ., JOIN THIS OPINION.

²²The defendants' alternative arguments about why their motion for judgment notwithstanding the verdict was properly granted are, in my view, without merit. Moreover, I do not consider whether Levy's testimony on causation regarding Watts's pancytopenia is reliable because, as the majority points out, "all of Watts's evidence as to damages regarded his non-Hodgkin's lymphoma" In other words, even if this testimony is inadmissible, the jury verdict would still stand, since it is based on Watts's lymphoma.