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United States Court of Appeals
Tenth Circuit

JAN 7 1999

PATRICK FISHER
Clerk

PUBLISH

UNITED STATES COURT OF APPEALS

TENTH CIRCUIT

JEFFREY A. MITCHELL and VERNA MITCHELL, individually and as executors of the estate of Jeffrey A. Mitchell, Bryan A. Mitchell, a minor, by and through their mother, next friend,

Plaintiffs-Appellants,

v.

GENCORP INC.,

Defendant-Appellee.

No. 97-3219

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF KANSAS
(D.C. No. 94-4110-RDR)
(968 F.Supp. 592)

David O. Alegria of McCullough, Wareheim & Labunker, P.A., Topeka, Kansas, for Plaintiffs-Appellants.

Robert P. Numrich (Martha E. Madden with him on the brief) of Evans and Dixon, Kansas City, Missouri, for Defendant-Appellee.

Before **BALDOCK**, **MCKAY**, and **HENRY**, Circuit Judges.

BALDOCK, Circuit Judge.

Plaintiffs Jeffrey A. Mitchell and Verna Mitchell appeal the district court's grant of summary judgment in favor of Defendant Gencorp. Specifically, Plaintiffs argue that the district court erroneously excluded the testimony of their expert witnesses and, as a result, granted summary judgment in favor of Defendant because Plaintiffs failed to establish causation. Our jurisdiction arises under 28 U.S.C. § 1291. We affirm.

I.

Jeffrey A. Mitchell worked as a warehouseman and truck driver for Midway Sales and Distribution, Inc. from 1988 until 1993. Mitchell's positions with Midway required him to stock, organize and fill orders from the company's "flammable room." The "flammable room" is twelve feet wide by thirty feet long with a ten-foot ceiling. The room has no forced ventilation and the evidence before the district court suggests that some barrels leaked in the room. During Mitchell's tenure, the room contained, among other things, products manufactured by Defendant which contained Toluene, Xylene, Hexane and Haptene. Mitchell entered the "flammable room" several times each day and remained for periods varying from less than one minute to as many as fifteen minutes.

In 1992, doctors diagnosed Mitchell with chronic myelogenous leukemia. After some investigation, Mitchell concluded that his exposure to Defendant's products caused him to develop chronic mylogenous leukemia. Accordingly, Mitchell filed suit seeking compensatory and punitive damages from Defendant for negligence, breach of express and implied warranties, and strict liability. Mitchell died on June 1, 1995, at which time

his executor and several additional parties were substituted as Plaintiffs.

Plaintiffs proposed to introduce five expert witnesses at trial. Plaintiff first proposed to introduce the testimony of Steve Herron, an industrial hygienist. In forming his opinion, Herron studied photographs of the "flammable room" and material safety data sheets listing the chemicals contained in Defendant's products. From this and his general knowledge of chemicals, Herron opined that Mitchell's exposure to Defendant's products probably caused him to develop chronic mylogenous leukemia. Herron never visited the flammable room and conducted no air tests to demonstrate Mitchell's level of exposure to the chemicals. Moreover, he did not attempt to recreate the level of exposure through computer modeling.

Plaintiff also proposed to call four physicians at trial. Each physician examined Mitchell and the material safety data sheets listing the chemicals contained in Defendant's products. The physicians had no information suggesting Mitchell had been exposed to benzene, a substance thought to cause certain types of leukemia, and relied largely on Mitchell's personal recollection to determine his level of exposure to the chemicals in the "flammable room." In forming their opinions, the physicians reviewed several published articles suggesting a relationship between benzene exposure and certain types of leukemia. No article the physicians produced, however, showed a supportable link between benzene exposure and chronic mylogenous leukemia; the type of leukemia from which Mitchell suffered.

Prior to trial, Defendant filed a motion in limine seeking to prevent Plaintiffs' experts from testifying. After a lengthy hearing held pursuant to Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993), the district court determined that "the opinions of plaintiffs' expert witnesses [were not] based on scientifically valid principles and, therefore, [did] not meet the reliability requirements of Rule 702 as interpreted by the Supreme Court in Daubert." Based on this determination, the district court excluded the evidence. Also pending before the court was Plaintiffs' motion for summary judgment. The district court determined that without the assistance of their expert witnesses, Plaintiffs could not prove Mitchell's exposure to Defendant's products caused him to develop chronic mylogenous leukemia. Therefore, the court granted Defendant's motion for summary judgment.

Where a trial court excludes "evidence essential to maintain a cause of action, the propriety of summary judgment depends, as here, entirely on the evidentiary ruling." Allen v. Pennsylvania Engineering Corp., 102 F.3d 194, 196 (5th Cir. 1996). Thus, we focus on the district court's evidentiary ruling, which we review for an abuse of discretion. General Electric v. Joiner, 118 S.Ct. 512, 519 (1997). Once we determine the propriety of the district court's decision to exclude evidence, we must then determine whether the district court correctly granted summary judgment in Defendant's favor. This we review de novo. Aramburu v. The Boeing Co., 112 F.3d 1398, 1402 (10th Cir. 1997).

II.

Federal Rule of Evidence 702 allows the parties to present scientific testimony through a qualified expert where such evidence "will assist the trier of fact to understand the evidence or to determine a fact in issue." In Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 578 (1993), the Supreme Court defined the role of the trial judge in admitting scientific testimony under Rule 702. Describing the trial judge's role as that of a "gatekeeper," the Court listed several non-exclusive factors which it deemed relevant in deciding whether to admit expert scientific testimony. Id. at 589 n.7, 593-94. First, the Court stated that the subject of the expert's testimony must be based on scientific knowledge. Id. at 590. Scientific knowledge, the court explained "implies a grounding in the methods and procedures of science" which must be based on actual knowledge and not "subjective belief or unsupported speculation." Id. In other words, "an inference or assertion must be derived by the scientific method . . . [and] must be supported by appropriate validation – ie. 'good grounds,' based on what is known." Id. The Court also suggested that the trial court should consider a theory's susceptibility to testing and whether the theory has been subjected to such testing. Id. at 593.

The Court next noted that a trial court may consider whether the theory has been subjected to peer review. Id. Although not dispositive, subjecting a theory to the scrutiny of the scientific community may help validate an otherwise infirm theory by decreasing the likelihood that substantive flaws in the methodology exist. Id. at 593-94. The Court

also noted the importance of any known or potential rate of error associated with the theory and the maintenance and existence of any standards controlling the technique's operation. Id. at 594. Finally, the Court advised that a theory's level of acceptance in the scientific community may have some bearing on admissibility. Id. "Widespread acceptance can be an important factor in ruling particular evidence admissible, and a known technique which has been able to attract only minimal support within the community may properly be viewed with skepticism." Id. (internal quotations omitted).

The court also noted that the proposed expert testimony must be sufficiently tied to the facts of the case. Id. at 591. The court described this aspect of the district court's inquiry as one of "fit." Id. "'Fit' is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes." Id.

III.

A.

It is well established that a plaintiff in a toxic tort case must prove that he or she was exposed to and injured by a harmful substance manufactured by the defendant. Wright v. Willamette Industries, Inc., 91 F.3d 1105, 1106 (8th Cir. 1996); Wintz By And Through Wintz v. Northrup Corp., 110 F.3d 508, 515 (7th Cir. 1997); Allen v. Pennsylvania Engineering Corp., 102 F.3d 194, 199 (5th Cir. 1996). In order to carry this burden, a plaintiff must demonstrate "the levels of exposure that are hazardous to human beings generally as well as the plaintiff's actual level of exposure to the defendant's toxic

substance before he or she may recover." Wright, 91 F.3d at 1106. Although the district court, in this case, did not focus on Mitchell's level of exposure to Defendant's chemicals, our review of the record suggests that the information relied upon by Plaintiffs' experts with respect to Mitchell's level of exposure was "so sadly lacking as to be mere guesswork." See Allen, 102 F.3d at 194.

The record demonstrates that Plaintiffs attempted to establish Mitchell's level of exposure in two ways. First, Plaintiffs attempted to establish Mitchell's level of exposure through his own statements describing the number and length of visits he made to the "flammable room." Second, Plaintiffs attempted to set the level of exposure through Steve Herron, an industrial hygienist, who after studying material safety data sheets and pictures showing some chemical spillage, opined that Mitchell's exposure to Defendant's products caused him to develop chronic mylogenous leukemia. These attempts fall short.

While Mitchell's testimony could be relevant to proving that the "flammable room" contained chemicals, it does not clarify the level of chemicals to which Mitchell was exposed. Similarly, the materials relied upon by Herron are not relevant in determining level of exposure. It makes little sense to argue that a scientist can look at pictures and a list of chemicals contained in a room and arrive at a level of exposure. Moreover, Herron himself testified that there was no occupational exposure data.

We believe a plaintiff must prove level of the exposure using techniques subject to objective, independent validation in the scientific community. See Moore v. Ashland

Chemical, Inc., 151 F.3d 269, 276 (5th Cir. 1998) (en banc). At a minimum, the expert testimony should include a description of the method used to arrive at the level of exposure and scientific data supporting the determination. The expert's assurance that the methodology and supporting data is reliable will not suffice. Id. "Scientific knowledge of the harmful level of exposure to a chemical plus knowledge that plaintiff was exposed to such quantities are minimal facts necessary to sustain the plaintiff's burden in a toxic tort case." Allen, 102 F.3d at 199. Absent supporting scientific data, Mitchell's estimates and Herron's conclusions are little more than guesswork. Guesses, even if educated, are insufficient to prove the level of exposure in a toxic tort case. See Daubert, 509 U.S. at 2795 (unsupported speculation and subjective belief insufficient to meet Fed. R. Evid. 702's reliability requirement).

B.

Under Daubert, proposed expert testimony must be supported by "appropriate validation – ie., 'good grounds,' based on what is known." 509 U.S. at 590. The plaintiff need not prove that the expert is undisputably correct or that the expert's theory is "generally accepted" in the scientific community. Moore, 151 F.3d at 276. Instead, the plaintiff must show that the method employed by the expert in reaching the conclusion is scientifically sound and that the opinion is based on facts which sufficiently satisfy Rule 702's reliability requirements. E.g., In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 744 (3d Cir. 1994).

The physicians called by Plaintiffs testified that exposure to Defendant's chemicals caused Mitchell to develop chronic mylogenous leukemia. The physicians supported their conclusions with various published works indicating a link between exposure to benzene and certain types of leukemia. The physicians, however, had no information suggesting that Mitchell was ever exposed to benzene.[1] To compensate for this, the experts rendered their opinions as follows: (1) Defendant's products are chemically similar to benzene; (2) because Defendant's products and benzene are chemically similar, they should affect the body in similar ways; (3) benzene exposure causes certain types of leukemia; (4) because benzene exposure causes other types of leukemia, it is logical that it could cause chronic mylogenous leukemia as well; (5) therefore, Mitchell's exposure to Defendant's products caused him to develop chronic mylogenous leukemia. The district court found that the doctors' opinions lacked sufficient scientific validation to withstand the strictures of Daubert.[2]

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[1] Although none of their experts delivered opinions based on the notion that Mitchell was exposed to benzene, Plaintiffs vigorously argue that Mitchell was indeed exposed to the chemical. In making this leap from exposure to chemicals whose material safety data sheets do not list benzene as an ingredient to actual benzene exposure, Plaintiffs offered the testimony of Steve Herron. Herron testified from "general knowledge" that the chemicals in Defendant's products are benzene derivatives. He stated that during the distillation process in which benzene is removed from the chemicals, that some benzene remains in the chemical. Herron neither named nor produced any material supporting this theory. Moreover, he could not predict with any certainty the amount of benzene left behind during the distillation process; a fact undoubtedly important to determining Mitchell's level of exposure.

[2] Herron also testified regarding causation. He stated: "in my opinion, exposure of Mr. Mitchell [to] high concentrations of these chemicals . . . probably more than not

In analyzing the experts' opinions, we begin by noting that the record contains some testimony about the similarities between benzene and Defendant's products. Missing from this evidence is additional testimony explaining exactly what these similarities are and how the similarities cause the human body to respond to Defendant's chemicals in a manner similar to benzene. Nor does the literature Plaintiffs presented support the notion that chemicals similar to benzene will affect the body in a manner similar enough to cause the same response as benzene. We recognize that "[t]rained experts commonly extrapolate from existing data. But nothing . . . 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." Joiner, 118 S.Ct. at

519.

Under Daubert, "any step that renders the analysis unreliable . . . renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology." In re R.R. Paoli R.R. Yard PCB Litigation, 35 F.3d 717, 745 (3d Cir. 1994). Without scientific data supporting their conclusions that chemicals similar to benzene cause the same problems as benzene, the

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could have caused . . . [him] to develop cancer . . . ." Considering his testimony that no exposure data existed and the fact that he failed to support his opinion with evidence of the methods he used and the scientific data supporting his conclusion, the district court correctly excluded his testimony.

analytical gap in the experts' testimony is simply too wide for the opinions to establish causation. The district court reached this conclusion and did not abuse its discretion in doing so.

C.

Assuming arguendo that exposure to Defendant's products cause the same problems as exposure to benzene, Plaintiffs' attempt to link Mitchell's chronic mylogenous leukemia and his exposure to Defendant's chemicals still fails. At the Daubert hearing, Plaintiffs' experts produced articles supporting their opinion that exposure to benzene and certain types of leukemia are causally related. Some of the literature suggested that there could be a connection between chronic mylogenous leukemia and benzene exposure. Each of these articles, however, notes that the data necessary to reach a conclusion on the issue is inadequate.

Plaintiffs' did present literature and testimony demonstrating some connection between benzene exposure and acute mylogenous leukemia. Recognizing the difference between acute mylogenous leukemia and chronic mylogenous leukemia, Plaintiffs' then elicited testimony from their experts to bridge the gap between the two types of leukemia. The experts so testified, but in doing so failed to provide sufficient support for their opinions.

Some of Plaintiffs' experts pointed to a sentence in an article they presented which referenced a study finding some relationship between benzene and toluene and chronic

mylogenous leukemia.[3] Plaintiffs' experts did not examine the study and did not produce the study at the Daubert hearing. Furthermore, the article mentioning the study criticized the study for failing to distinguish between benzene and toluene and for failing to provide an estimate of dose-response. The district court determined that no "scientist would attach weight to a study that he did not carefully examine and consider." Therefore, it gave no credence to the study. We believe it is crucial for experts to examine the studies upon which they rely in forming a medical opinion. By examining the studies, the expert may review the methodology employed by the scientist conducting the study and ensure the quality of the assumptions and data on which the study relies. Such examination is particularly important in cases, such as this one, where the article referencing the study actually criticizes it.

"Under the regime of Daubert . . . a district judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist." Rosen v. Ciba-Geigy Corp., 78 F.3d 316, 318 (7th Cir. 1996) (internal quotation omitted). Plaintiffs' experts

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[3] Plaintiffs place a sizeable amount of weight on the fact that toluene is classified as a carcinogen in the state of California. This reliance is largely misplaced. The methodology employed by a government agency "results from the preventive perspective that the agencies adopt in order to reduce public exposure to harmful substances. The agencies' threshold of proof is reasonably lower than that appropriate in tort law, which traditionally makes more particularized inquiries into cause and effect and requires a plaintiff to prove that it is more likely than not that another individual has caused him or her harm." Allen 102 F.3d at 198 (internal quotation omitted).

appear on the record before us to be "genuine scientists." Unfortunately, the analytical gaps in their opinions are too broad for their testimony to endure under the strictures of Daubert and Rule 702. The district court recognized this gap and did not abuse its discretion by finding that the expert's opinions were not reliable.

D.

We also find persuasive an additional ground on which the district court relied in excluding two of Plaintiffs' experts. Under Daubert, the "subject of an expert's testimony must be 'scientific . . . knowledge'. The adjective scientific implies a grounding in the methods and procedures of science." Daubert, 509 U.S. at 589-90. "Scientific method today is based on generating hypotheses and testing them to see if they can be falsified . . . ." Id. at 593. The district court found that Drs. Van Veldhuizen and Milner reached their ultimate conclusions before studying the available literature. "[This type of action] turns scientific analysis on its head. Instead of reasoning known facts to reach a conclusion, the experts here reasoned from an end result in order to hypothesize what needed to be known but what was not." Sorensen By And Through Dunbar v. Shaklee Corp., 31 F.3d at 638, 649 (8th Cir. 1994). "[S]cientists whose conviction about the ultimate conclusion of their research is so firm that they are willing to aver under oath that it is correct prior to performing the necessary validating tests [may] properly be viewed by the district court as lacking the objectivity that is the hallmark of the scientific method." Clarr v. Burlington Northern Railway Co., 29 F.3d 499, 503 (9th Cir. 1994).

We believe that the district court was properly concerned with the methods employed by these two doctors and, therefore, did not abuse its discretion by discounting the testimony.

E.

We further note that several of the Supreme Court's non-dispositive factors support the district court's decision. First, the opinions prepared by Plaintiffs' experts were not published and subjected to peer review. By failing to subject their opinions to peer review, the experts missed the opportunity to have other scientists review their work and warn them of possible flaws in their methodology. Second, the record lacks evidence showing how the experts' conclusions may be tested and the applicable rate of error. Finally, the theories espoused by Plaintiffs' experts are not generally accepted within the scientific community.

IV.

In a meticulous memorandum and order, the district court thoroughly applied the test set forth in Daubert and excluded Plaintiffs' expert witnesses. For the foregoing reasons, we believe the district court did not abuse its discretion by determining that Plaintiffs' proffered expert testimony was inadmissible. We further conclude that without the benefit of their experts, Plaintiffs cannot prove causation. Accordingly, the district court correctly granted Defendant's motion for summary judgment.

The district court's judgment is AFFIRMED.