

mixed with the fiber just prior to drying. It is undisputed that the plant emits particulate matter, part of which has been treated with formaldehyde, into the air. The Wrights live a short distance from the plant and claim to have suffered from a number of afflictions (e.g., headaches, sore throats, watery eyes, running noses, dizziness, and shortness of breath) which they blame on the emissions from the plant. The Wrights brought suit on a variety of theories and prevailed on their negligence claim. The jury awarded the five plaintiffs a total of \$226,250.00 in compensatory damages for their personal injuries.

Willamette made a number of post-verdict motions for judgment as a matter of law, which the district court denied. On appeal, Willamette emphasizes, among other things, that the Wrights failed to make out a submissible case on the issue of proximate cause.

II.

We review a district court's denial of a motion for judgment as a matter of law by applying the same standard that the district court applied originally. Sherbert v. Alcan Aluminum Corp., 66 F.3d 965, 967 (8th Cir. 1995). Willamette's motion for judgment as a matter of law should not be granted unless all the evidence points its way and is susceptible of no reasonable inferences sustaining the Wrights' position. See Jacobs Mfg. Co. v. Sam Brown Co., 19 F.3d 1259, 1263 (8th Cir.), cert. denied, 115 S. Ct. 487 (1994); First Dakota Nat'l Bank v. St. Paul Fire & Marine Ins. Co., 2 F.3d 801, 808-09 (8th Cir. 1993); Fed. R. Civ. P. 50(b).

The Wrights, of course, had the burden of proving proximate cause in order to recover under their negligence theory. See Jackson v. Anchor Packing Co., 994 F.2d 1295, 1301-02 (8th Cir. 1993) (applying Arkansas law); Ellsworth Brothers Truck Lines v. Canady, 245 Ark. 1055, 1057, 437 S.W.2d 243, 244 (1969). Proximate cause in Arkansas is defined as a "cause which, in a natural and continuous sequence, produces damage and without which the damage

would not have occurred.'" Rogers v. Armstrong World Indus., Inc., 744 F. Supp. 901, 904 (E.D. Ark. 1990) (quoting Ark. Model Jury Instr. Civil 3d ed. 501).

Willamette contends, among other things, that in order to shift the costs of their injuries to Willamette the Wrights had to demonstrate actual exposure to a toxic substance emitted from Willamette's plant at levels that are known to produce harms like the ones of which the Wrights complain. Willamette's emphasis on exposure levels is a reasonable one that is reflected in a number of recent toxic tort cases. See, e.g., Abuan v. General Elec. Co., 3 F.3d 329, 332-34 (9th Cir. 1993), cert. denied, 114 S. Ct. 1064 (1994); Chikovsky v. Ortho Pharmaceutical Corp., 832 F. Supp. 341, 345-46 (S.D. Fla. 1993); Mateer v. U.S. Aluminum, Civ. No. 88-2147, 1989 WL 60442 (E.D. Pa. June 6, 1989). We agree with Willamette that a plaintiff in a toxic tort case must prove 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.

The Wrights cite two Arkansas cases, Worthington v. Roberts, 304 Ark. 551, 803 S.W.2d 906 (1991), and Southwestern Bell Telephone Co. v. Smith, 220 Ark. 223, 247 S.W.2d 16 (1952), for the proposition that Arkansas does not require proof of the level of exposure in toxic tort cases. In Smith, a telephone company sprayed vegetation under its telephone lines, after which Mr. Smith's cows ate the vegetation and died; and in Roberts, pesticides drifted in a strong wind onto Mr. Roberts's property after a crop duster sprayed nearby fields, following which Mr. Roberts's trees and vegetation appeared to have been damaged. We believe that plaintiffs' reliance on these cases is misplaced. The reports of these cases do not reveal whether the plaintiff offered any proof concerning what levels of the relevant chemical might be expected to produce appreciable harm to animals or plants. The argument that defendants make in this case was simply not

advanced in these previous Arkansas cases, and they are therefore of no precedential value on the precise question which concerns us here.

A legislature might well altogether outlaw a substance on the ground that it is known to involve a risk of appreciable harm to human beings, without having precise data on the question of how much harm, or what kind of harm, some specific amount of that substance might reasonably be expected to cause to some particular kinds of persons or even to an average or an ordinary person. Such legislation would presumably, as an ordinary matter, survive judicial scrutiny as a rational exercise of the police power. See, e.g., Minnesota v. Clover Leaf Creamery Co., 449 U.S. 456, 464-70 (1981); United States v. Carolene Prods. Co., 304 U.S. 144, 147-54 (1938); Borden's Co. v. Baldwin, 293 U.S. 194, 209-10 (1934). Indeed, the lack of precise information about the extent of a risk might well be seen as bolstering the legitimacy of a legislative prohibition rather than undermining it. There is an argument, however, that if the government could disseminate what information there is on the subject to the public in a relatively costless manner, or if the market were already providing it, then it would not be rational to prohibit trade in the relevant substance altogether. In other words, it is possible that a court might hold it irrational to prohibit the exercise of individual choice when bargaining parties are informed and market exchanges are possible.

Whatever may be the considerations that ought to guide a legislature in its determination of what the general good requires, courts and juries, in deciding cases, traditionally make more particularized inquiries into matters of cause and effect. Actions in tort for damages focus on the question of whether to transfer money from one individual to another, and under common-law principles (like the ones that Arkansas law recognizes) that transfer can take place only if one individual proves, among other things, that it is more likely than not that another individual has

caused him or her harm. It is therefore not enough for a plaintiff to show that a certain chemical agent sometimes causes the kind of harm that he or she is complaining of. At a minimum, we think that there must be evidence from which the factfinder can conclude that the plaintiff was exposed to levels of that agent that are known to cause the kind of harm that the plaintiff claims to have suffered. See Abuan v. General Elec. Co., 3 F.3d at 333. We do not require a mathematically precise table equating levels of exposure with levels of harm, but there must be evidence from which a reasonable person could conclude that a defendant's emission has probably caused a particular plaintiff the kind of harm of which he or she complains before there can be a recovery.

In this case, while the Wrights proved that they were exposed to defendant's emissions and that wood fibers from defendant's plant were in their house, their sputum, and their urine, they failed to produce evidence that they were exposed to a hazardous level of formaldehyde from the fibers emanating from Willamette's plant. Their experts' information on this subject was simply insufficient. Dr. Fred Fowler, an industrial hygienist, and Dr. Jimmie Valentine, a pharmacologist, did offer testimony about the levels of gaseous formaldehyde that might be expected to cause symptoms like the ones that plaintiffs claim to have experienced. But the Wrights do not claim to have been injured from breathing gaseous formaldehyde, and they make no reference to any studies that reveal the levels of exposure to wood fibers impregnated with formaldehyde that are likely to produce adverse consequences. It is true that Dr. Frank Peretti, after a great deal of prodding, testified that the Wrights' complaints were more probably than not related to exposure to formaldehyde, but that opinion was not based on any knowledge about what amounts of wood fibers impregnated with formaldehyde involve an appreciable risk of harm to human beings who breathe them. The trial court should therefore have excluded Dr. Peretti's testimony, as Willamette requested it to do, because it was not based on scientific knowledge. See Daubert v. Merrill

Dow Pharmaceuticals, Inc., 509 U.S. 579, 589-91 (1993); Fed. R. Evid. 702; Federal Judicial Center, Reference Manual on Scientific Evidence 47-48 (1994). Dr. Peretti's testimony regarding the probable cause of the Wrights' claimed injuries was simply speculation.

The jury could therefore only have speculated about whether the amount of formaldehyde from Willamette's plant to which each plaintiff was exposed was sufficient to cause their injuries or, indeed, any injuries at all. (To the extent that plaintiffs' theory of causation and harm related to the wood fibers rather than the formaldehyde on those fibers, the proof was infirm for the same reason, namely, failing to offer proof that the plaintiffs were exposed to wood fibers at levels capable of causing injury.) Without proving hazardous levels of exposure to Willamette's formaldehyde, the Wrights failed to carry their burden of proof at trial on the issue of causation because the evidence failed to support a reasonable inference in favor of the jury's implicit finding against Willamette on the causation issue.

III.

Judge Heaney, in his dissenting opinion, disagrees with our characterization of this case as being about money, and expresses the view that this "fails to acknowledge the important human elements regarding the injuries at issue." But lawsuits, unless they seek only a declaratory judgment, are always either about money or some form of specific relief. Those are the only kinds of relief that a court can give, and in this case all the plaintiffs asked for was money. Our characterization of the case is therefore the plaintiffs' characterization of it. Money, moreover, is not properly to be contrasted with human or humane concerns. To the contrary, the reason that we compensate people (that is, transfer money from defendants to plaintiffs) is because rights that are grounded in considerations of humanity have been violated. We believe that it is humane to monetize welfare losses associated

with grief, pain and suffering, humiliation, mental anguish, and other intangible injuries so that we can make plaintiffs whole. What we do not do, again for reasons grounded in humanity, is force a defendant to compensate a plaintiff if the plaintiff does not show that the defendant has probably done something to him.

IV.

For the foregoing reasons, we reverse the judgment of the district court.

HEANEY, Circuit Judge, dissenting.

For eight days, an Arkansas jury listened to the evidence presented by both parties. The case was submitted to the jury on instructions that were not objected to by the defendant. After deliberation, the jury returned verdicts in favor of the Wright family. The defendants then moved the district court for judgment notwithstanding the jury verdict for substantially the same reasons that are raised on this appeal. The district court judge, who had presided over the entire trial, denied the defendant's motion. I believe the jury's and the judge's first-hand impression of the evidence should be sustained in this case. Therefore, I respectfully dissent.

It is undisputed that the Willamette plant emits minute wood fibers laced with formaldehyde. It is also undisputed that because Willamette failed to install equipment that would have significantly lowered the emissions, the levels of formaldehyde emitted from the plant exceeded levels permitted by industry and state standards.

The Wright family lives within three-quarters of a mile of the plant. There is uncontradicted evidence that emissions from the plant fell like "snow" on the Wrights' property to the extent that overnight emissions could be seen on cars. Fibers from the plant

were also found in the Wrights' air conditioner. The Wright family was examined by physicians and significant levels of toxic emissions from the plant were found in their sputum and urine. The Wright family suffered from headaches, sore throats, watery eyes, runny noses, dizziness, and shortness of breath, which the treating physician testified were more probably than not related to their exposure to the plant emissions. This testimony was properly received.

Having heard all of the above evidence, the jury determined that the Wright family's disabilities were a direct result of the constant exposure to the formaldehyde that was emitted from the Willamette plant. Clearly, the evidence presented was sufficient to sustain the verdict. We should not substitute our judgment for that of the jury.

The majority argues that the jury verdict must be set aside because no scientific studies were introduced to establish that formaldehyde-laced, minute fibers involve an appreciable risk of harm to humans who breathe them. There are at least two answers to this argument. First, there was abundant testimony that distinguished the effects on human health of dust and other nontoxic air pollutants from formaldehyde. The former being largely benign and the latter being harmful. Second, the State of Arkansas has made a determination that it is harmful to health to discharge formaldehyde minute particles and gases into the atmosphere. Of course, there must be testimony that the toxins found their way into the bodies of the humans, but there was more than sufficient evidence on this score.

I do not disagree with the majority's statement that there must be evidence from which the jury could find that the Wrights were exposed to levels of formaldehyde that are known to cause the harm that the Wright family suffered. In fact, however, the required evidence was produced. The State of Arkansas has

determined that no plant shall emit formaldehyde because such emissions are dangerous to the health of persons who ingest them. Willamette failed to install available equipment to control the discharge of this particulate matter in either the solid or gaseous form. The formaldehyde emissions found their way to the Wrights' property. They were found in the family's air conditioner, and more importantly, in the family's sputum and urine. Competent medical testimony was presented that stated that it was more probable than not that their illness was caused by the formaldehyde. Thus, the circle was complete and proximate cause established. Dr. Peretti may or may not have been prodded to relate the Wrights' illnesses to formaldehyde, but he did; and the jury could have rejected his testimony if it did not believe him.

Finally, the majority dehumanizes the issues in this case by stating that the focus on cases of this type is the transference of money. This fails to acknowledge the important human elements regarding the injuries at issue and the responsibility of Willamette to comply with properly established health and safety standards that can be met by installing state of the art equipment.

For all of the reasons stated above, I would affirm the district court and permit the jury verdict to stand.

A true copy.

Attest:

CLERK, U. S. COURT OF APPEALS, EIGHTH CIRCUIT.