United States Court of Appeals

FOR THE EIGHTH CIRCUIT

No. 03-3836

Fireman's Fund Insurance Company; Plaintiff, Travelers Indemnity Company of America; Intervenor Below/ Appellant, American Economy Insurance Company; American International Recovery; Home Video of Minneapolis, Inc.; Intervenors Below, v. Canon U.S.A., Inc., Appellee.	*	Appeal from the United States District Court for the District of Minnesota.

Submitted: October 22, 2004
Filed: January 12, 2005

Before BYE, LAY, and GRUENDER, Circuit Judges.

GRUENDER, Circuit Judge.

Travelers Indemnity Company of America ("Travelers") appeals the district court's[1] grant of summary judgment to Canon U.S.A., Inc. ("Canon") on Travelers' claims of strict product liability; negligent design, manufacturing and testing; and breach of warranty. For the reasons discussed below, we affirm.

I. BACKGROUND

On October 16, 2000, a fire destroyed Home Video, a video rental store located in a strip mall in St. Paul, Minnesota, and damaged the three other businesses in the strip mall. The mall's owner was insured by Travelers, the sole appellant in this case. The insurers of the three other tenants, as well as Home Video, were also plaintiffs in the suit below.

A Canon model NP 6016 copier was located in the storeroom of Home Video. The copier had been in use for five years. Service records indicated the copier was upgraded in 1998. Home Video employees stated that the copier often jammed on the heavy paper used for making video cassette jackets but had only jammed once on plain paper in five years. The employees could usually clear paper jams themselves but occasionally had to call a service technician. The copier was serviced one week before the fire.

At around 1:15 p.m. on the day of the fire, a Home Video employee set the copier to make about 80 plain paper copies and left the storeroom with the copying in progress. The locked storeroom apparently was undisturbed until about 7:30 p.m., when another employee entered the storeroom to put some papers in the adjoining

[1]The Honorable David S. Doty, United States District Judge for the District of Minnesota.

office. The employee did not see, hear or smell anything unusual. The employee then smoked a cigarette. The employee claims to have left the storeroom and entered a back hallway to smoke, although surveillance cameras show him returning to the front of the store from the direction of the storeroom, not from the back hallway. The employee also left the storeroom door locked.

At approximately 8:00 p.m., the store telephones began ringing nonstop, the computers froze, and the security alarms activated. A customer reported the smell of smoke to Home Video employees, and smoke was spotted in the back of the store. The employees opened the door to the storeroom and witnessed the fire in progress. The employees then evacuated the building. The fire destroyed the store and damaged the other stores in the strip mall.

Several fire investigators examined the scene of the fire. The St. Paul Fire Department concluded that the fire was unintentional and that the copier was the most probable cause of the fire. Three other fire scene investigators, hired separately by Travelers, Home Video and two other tenants' insurers, also identified the copier as the source of the fire. Travelers and the other plaintiffs brought suit against Canon on theories of strict product liability; negligent design, manufacturing and testing; and breach of warranty.

The plaintiff insurance companies hired several fire causation experts to determine how the copier could have caused the fire. The burned copier was subjected to five detailed inspections between early 2001 and September 2002, including visual, x-ray and electron-microscope examinations. Fire causation experts Beth Anderson and Michael Wald each produced reports in October 2002 stating that the copier's internal burn patterns showed that the upper fixing heater assembly caused the fire and that the design of the assembly was defective because it included a thermal fuse safety device that was not properly rated to prevent such a fire.

Canon's expert, Lawrence Sacco, filed an expert report challenging the plaintiffs' theory. In March 2003, Anderson and Wald each filed a rebuttal of Sacco's opinion in which they introduced the copier's composite power supply board as another potential cause of the fire. The plaintiffs sought to re-open discovery in March 2003 in order to obtain more information for their composite power supply board theory, but the district court denied the motion as untimely. That decision was not appealed.

Canon moved for summary judgment on the basis that the expert opinions of Anderson and Wald were inadmissible, leaving the plaintiffs with no evidence of a defect, a necessary element of each of Travelers' claims. The district court granted Canon's motion, concluding that the expert opinions were unreliable and potentially confusing to a jury. The district court further held that, even if the expert opinions were admitted into evidence, the plaintiffs could not demonstrate that the alleged defects caused the fire. Travelers appeals the district court's grant of summary judgment to Canon.

II. DISCUSSION

We review the district court's grant of summary judgment de novo, applying the same standard the district court applied. *Anderson v. Raymond Corp.*, 340 F.3d 520, 524 (8th Cir. 2003). We view the evidence in the light most favorable to Travelers, giving it the benefit of all reasonable inferences that may be drawn from the evidence. *Id*. We review the district court's decision concerning the admission of expert opinions for an abuse of discretion. *Id.* at 523.

A. Reliability of the Expert Testimony

The opinion of a qualified expert witness is admissible if (1) it is based upon sufficient facts or data, (2) it is the product of reliable principles and methods, and (3)

the expert has applied the principles and methods reliably to the facts of the case. Fed. R. Evid. 702. A trial court must be given wide latitude in determining whether an expert's testimony is reliable. *See Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999).

Anderson and Wald purportedly followed standards set forth by the National Fire Protection Association in its publication *NFPA 921: Guide for Fire and Explosion Investigations* (1998). This guide qualifies as a reliable method endorsed by a professional organization. *See Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 594 (1993). However, *NFPA 921* requires that hypotheses of fire origin must be carefully examined against empirical data obtained from fire scene analysis and appropriate testing. The district court did not abuse its discretion in concluding that Anderson and Wald did not apply this standard reliably to the facts of the case.

Anderson and Wald initially stated, to a reasonable degree of engineering certainty, that the burn patterns inside the copier established the copier's upper fixing heater assembly as the cause of the fire. They attempted to demonstrate that the copier's safety devices were improperly designed to prevent such a fire.

A brief description of the upper fixing heater assembly is necessary. In normal copier operation, the heating element in the upper fixing heater assembly applies heat to affix the copied image to the paper. The copier's heater control circuitry varies the electrical current supplied to the heating element to automatically control the amount of heat generated. The heater control circuitry includes several safety features to prevent overheating, including programmed shutdown limits based on feedback from two temperature sensors and independent hardware shutdown limits based on the two sensors. In addition, if the environmental temperature near the heating element persistently exceeds a safety threshold, a thermal fuse in the circuit opens, cutting off

the electrical current to the heating element and stopping any heating. As a final safety measure to prevent overheating, the heating element is designed to self-destruct in the event of rapid heating.

Anderson and Wald each stated that a fire in the upper fixing heater assembly must have started with a malfunction in the heater control circuitry. They concluded that a defective thermal fuse design failed to prevent the fire. This conclusion was based on three experimental tests of an exemplar upper fixing heater assembly in which the heater control circuitry was entirely bypassed, except for the thermal fuse. By carefully applying electrical current directly to the heating element, Anderson was able to produce a thin brown scorch line on a sheet of paper fastened to the heating element before the thermal fuse opened to shut off the current.

We agree with the district court that this experimental testing did not meet the standards of *NFPA 921*. Anderson and Wald admitted that to actually start a fire without a bypass of the heater control circuitry and its embedded safety features, the heater control circuitry first would have to malfunction. This undescribed malfunction would have to supply an electrical current to the heating element precisely tailored to generate not just scorching, but also an open flame. Furthermore, the temperature rise would have to be fast enough to avoid triggering the thermal fuse yet slow enough to avoid cracking the heating element. *See Weisgram v. Marley Co.*, 169 F.3d 514, 521 (8th Cir. 1999) (excluding an expert's opinion that a defective thermostat in a baseboard heater caused a fire because the expert could not adequately demonstrate how a backup high-limit control failed), *aff'd*, 528 U.S. 440 (2000). Not only did the experimental testing fail to produce an open flame, but the experts were unable to explain the assumed heater control circuitry malfunction in theory or replicate it in any test. In short, the experimental testing of the heating element and thermal fuse in isolation did not establish that the thermal fuse would fail to prevent a fire caused by a heater control circuitry malfunction.

Additionally, examination of the thermal fuse in the burned copier revealed that no electrical current was flowing to the heating element when the fuse opened. In other words, the heating element was not activated when the rising environmental temperature caused the fuse to open, suggesting that the heating element was not the source of the fire. *NFPA 921* § 2-3.6 requires the investigator to "compare[] his or her hypothesis to all known facts," but Anderson and Wald did not attempt to reconcile this empirical evidence with their theory.

Travelers also challenges the district court's finding that the experts' last-minute alternative theory–a failure of the copier's composite power supply board–lacked evidentiary support on the record. In normal copier operation, the composite power supply board receives power from a standard electrical outlet via the copier's power cord. The composite power supply board conditions and distributes the electrical power to the rest of the copier.

After learning of two separate incidents involving Canon copiers of the same model, Anderson and Wald each introduced the composite power supply board theory in their respective rebuttal reports. In one of these incidents, a composite power supply board was observed emitting sparks. The other incident involved an actual fire originating at the composite power supply board, but investigators there noted evidence that the board had been tampered with prior to the fire.

Wald's rebuttal report stated that the burn patterns inside the copier, combined with his new knowledge of the separate incidents, were "very compelling" evidence that the composite power supply board was the source of the fire. However, Wald did not claim that any particular design or manufacturing defect on the board caused the fire. Furthermore, in his original report, Wald relied on the burn patterns inside the copier to establish the upper fixing heater assembly, located elsewhere in the copier, as the source of the fire. We agree with the district court's conclusion that this sudden reversal of opinion regarding the meaning of the burn pattern evidence, in a

case where that evidence was the sole basis from which to infer the location of a defect, seriously undermines the reliability of the experts' opinions.

Anderson similarly changed her opinion of the burn pattern evidence inside the copier after learning of the two other composite power supply board incidents. Her rebuttal report simply stated that more information would be helpful in determining whether the board was involved in the fire, but a motion for additional discovery was denied as untimely. Anderson later tested electrical components that were "of a similar type" to components on the composite power supply board. By applying AC voltage to components designed for DC voltage, Anderson was able to force the components to spark. However, Anderson did not describe any design or manufacturing defect on the composite power supply board that would expose such components to AC voltage. Anderson also admitted that the circumstances surrounding the two other composite power supply board incidents were substantially dissimilar to the events surrounding the Home Video fire.

In summary, neither Anderson nor Wald proposed a specific defect on the composite power supply board that might have caused the fire. Furthermore, neither expert carefully examined this hypothesis of fire origin against empirical data obtained from fire scene analysis and appropriate testing, as required by *NFPA 921*. The district court did not abuse its discretion in concluding that the evidentiary support for the composite power supply board theory was inadequate.

Because the experts did not apply the principles and methods of *NFPA 921* reliably to the facts of the case, the district court did not abuse its discretion in concluding that Anderson's and Wald's expert opinions were unreliable. As a result, it was not error to exclude these expert opinions.

B. Potential of the Expert Testimony to Confuse the Jury

In addition to concluding that the expert opinions were unreliable, the district court excluded the opinions on the alternative basis that the underlying experimental testing would be confusing to the jury.

The trial court may exclude evidence if it determines the evidence would confuse the issues or mislead the jury. Fed. R. Evid. 403. The admissibility of experimental tests in product liability cases "rests largely in the discretion of the trial judge and his decision will not be overturned absent a clear showing of an abuse of discretion." *McKnight v. Johnson Controls, Inc.*, 36 F.3d 1396, 1401 (8th Cir. 1994). "[E]xperimental evidence falls on a spectrum and the foundational standard for its admissibility is determined by whether the evidence is closer to simulating the accident or to demonstrating abstract scientific principles." *Id.* at 1402. The more the experiment appears to simulate the accident, the more similar the conditions of the experiment must be to the actual accident conditions. *Id.*

As described above, Anderson and Wald performed three tests on an exemplar copier and its components. They isolated the heating element and thermal fuse from the upper fixing heater assembly by bypassing the heater control circuitry and providing an electrical current of their choosing to the heating element. In two of these tests, the heating element and thermal fuse were tested outside the copier. The third test was performed with the upper fixing heater assembly physically installed in the exemplar copier, although the heating element and thermal fuse were still operationally isolated from the heater control circuitry and its embedded safety features.

We agree with the district court that these tests appear to recreate the cause of the fire while failing to address the presumed malfunction of the heater control circuitry and its associated safety features. In particular, the experiment on

operationally isolated components while they were physically installed in an exemplar copier could lead a juror to believe that the test results were representative of actual copier operation at the time of the fire. Therefore, the district court did not abuse its discretion in excluding the experts' opinions on the basis that the tests of the upper fixing heater assembly would be confusing to the jury.

C. Causation

To recover on a claim of strict product liability under Minnesota law, a plaintiff must present evidence from which a jury could justifiably find that (1) the product was in a defective condition, unreasonably dangerous for its intended use, (2) the defect existed when the product left defendant's control, and (3) the defect was the proximate cause of the injury sustained. *Lee v. Crookston Coca-Cola Bottling Co.*, 188 N.W.2d 426, 432 (Minn. 1971). Claims of negligence and breach of warranty also include the causation element. *See Myers v. Hearth Techs., Inc.*, 621 N.W.2d 787, 792 (Minn. Ct. App. 2001) (setting forth the elements of a negligence claim); *Alley Constr. Co. v. State*, 219 N.W.2d 922, 925 n.1 (Minn. 1974) (setting forth the elements of a breach of warranty claim).

Absent the excluded opinions of the fire causation experts, Travelers presented no evidence of any defect in the copier. Because Travelers cannot prove that a defect in the copier was the proximate cause of the fire, summary judgment for Canon was proper. *See Lee*, 188 N.W.2d at 432 ("[T]he mere fact of injury during use of the product usually is insufficient proof to show existence of a defect at the time defendant relinquished control.").

Furthermore, even if the expert opinions of Anderson and Wald had been admissible, we agree with the district court that Travelers failed to present evidence from which a reasonable jury could find that a defect in the copier was the proximate cause of the fire. The experts theorized that the thermal fuse was defective.

However, the experts' experimental tests did not demonstrate that the heating element could generate an open flame before the thermal fuse opened, and the experts admitted that an open flame would have been necessary to start the fire. Therefore, the experts failed to demonstrate that the thermal fuse was defective.

In addition, the experts admitted that the heater control circuitry would have to malfunction in order to supply enough electrical current to the heating element to start a fire. However, the experts advanced no theory or experiment showing how the heater control circuitry could malfunction to produce such a current. Without evidence to show that the heater control circuitry could malfunction in such a way as to start a fire, Travelers cannot show that a defectively designed thermal fuse failed to prevent that fire. Therefore, even if the expert opinions had been admissible, we conclude that Travelers produced no evidence from which a reasonable jury could find that the allegedly defective thermal fuse caused the fire.

Similarly, neither Anderson nor Wald advanced a theory or experiment showing how a defect on the composite power supply board could have caused the fire. Therefore, we also conclude that, had the expert opinions been admissible, Travelers produced no evidence from which a reasonable jury could find that the allegedly defective composite power supply board caused the fire.

Travelers claims that, had Canon employed an alternative design for the copier incorporating additional thermal and electrical fuse protection, a fire could never have started. Travelers relies on *Lauzon v. Senco Prods., Inc.*, 270 F.3d 681 (8th Cir. 2001), for the proposition that if a plaintiff identifies an alternative design that would have prevented the accident, then the design of the product involved in the accident must be a proximate cause.

In *Lauzon*, the manufacturer produced two models of a nail gun. The "SN2" model allowed the operator to rapid-fire nails by bouncing a contact point on the nose

of the gun against the work surface while squeezing the trigger continuously. The sequential-fire model, on the other hand, required the operator to release and depress both the trigger and the nose contact point each time to fire a nail. Lauzon drove a nail through his hand when his SN2 recoiled during rapid-fire mode. An expert tested the SN2 and determined that such an accident would not have been possible using the sequential-fire model.

The district court held the expert's testimony inadmissible, in part because the expert was unable to rule out other accident theories. *Id.* at 693. This Court reversed, holding that the expert "ruled out all other possible explanations through a safer alternative design, the sequential-fire pneumatic nailer." *Id.* The expert's testing established that the defective design of the SN2 caused the accident because the "use of the sequential-fire tool would preclude a nail being expelled at all, let alone into the hand of Lauzon." *Id.* at 694.

The instant case is distinguishable from *Lauzon* on two important grounds. First, the experimental testing in *Lauzon* proved that the rapid-fire mechanism was a but-for cause of the accident. In contrast, the experimental testing performed by Anderson and Wald produced no evidence that inadequate fuse protection in the copier was a but-for cause of the Home Video fire. Second, in *Lauzon* the safer alternative design was embodied in an existing product by the same manufacturer, and the expert showed specifically how its design would have prevented the accident. In the instant case, the experts talked vaguely about adding more fuses, but offered no evidence of a workable alternative design that would have made a fire less likely. Therefore, *Lauzon* does not help Travelers establish the causation element of its claims.

In summary, with or without the inadmissible opinions of its fire causation experts, Travelers did not introduce evidence from which a reasonable jury could find

that a defect in the copier was the proximate cause of the fire. Therefore, summary judgment for Canon was proper.

III. CONCLUSION

We affirm the district court's grant of summary judgment to Canon on Travelers' claims of strict product liability; negligent design, manufacturing and testing; and breach of warranty.
