

AMENDED: JUNE 14, 2004  
RENDERED: MAY 20, 2004  
TO BE PUBLISHED

# Supreme Court of Kentucky

2001-SC-0966-DG

# FINAL

DATE 6-23-04 ELLA G. GRAVES, J.D.

TOYOTA MOTOR CORPORATION;  
TOYOTA MOTOR SALES, U.S.A., INC.;  
TOYOTA MANUFACTURING CANADA, INC.;  
AND OXMOOR AUTO INC., D/B/A  
OXMOOR TOYOTA

APPELLANTS

V. ON REVIEW FROM COURT OF APPEALS  
2000-CA-001042  
JEFFERSON CIRCUIT COURT NO. 96-CI-003331

YU HSIA GREGORY AND  
WILLIAM G. GREGORY

APPELLEES

## OPINION OF THE COURT BY JUSTICE GRAVES

### REVERSING

On June 8, 1995, Appellee, Yu Hsia Gregory, was involved in a minor automobile accident wherein her 1993 Toyota Corolla collided with a small Isuzu moving van. Gregory's left arm was directly over the airbag module when it deployed, resulting in fractures to her radius and ulna, a fractured nasal bone, a dislocated tooth, second-degree burns to her forehead and cheek, and lacerations and contusions to her face and chest.

Gregory subsequently filed suit in the Jefferson Circuit Court against Appellant, Toyota Motor Corporation, alleging claims for strict liability based on design and manufacturing defects, misrepresentation, failure to warn, and breach of warranty. Gregory argued that the airbag in her Toyota Corolla deployed too aggressively resulting in her injuries, and also that Toyota failed to adequately warn her of the potential serious injuries caused by airbag deployment.

At trial, Gregory's expert, William Broadhead, a mechanical and safety restraint engineer, testified that he compared the Toyota airbag system with a Honda airbag system, and determined that the Honda's "rise rate" – the measurement of the pressure released by the airbag inflator over time (milliseconds) – was significantly lower than the Corolla's. Broadhead concluded that at the time of the manufacture of the Corolla airbag system, the technology was available to produce an airbag system that would not have caused the injuries sustained by Gregory.

To rebut Broadhead's opinions, one of Toyota's experts, Robert Gratzinger compared the Corolla airbag inflator with those of 35 other vehicles by various manufacturers. Gratzinger concluded that the deployment characteristics of Toyota's system were usual and customary and, in fact, state of the art, rather than unreasonably dangerous. Gratzinger stated that the inflation rate of the Corolla airbag was in the low average of all of the vehicles tested. Over Gregory's objection, the trial court admitted what is now referred to as the "Gratzinger Report."

At the close of evidence, the trial court instructed the jury, in part, that to return a verdict in favor of Gregory, it had to find that: (1) the Corolla airbag was defectively designed and unreasonably dangerous; (2) the defective design existed at the time of manufacture; (3) an ordinarily prudent manufacturer of similar vehicles would not have

put the Corolla on the market in that condition; (4) the defective condition was a substantial factor in causing Gregory's injuries; and (5) that Gregory had "proposed a feasible safer alternative design."

The jury returned a verdict in favor of Toyota. Gregory appealed and the Court of Appeals subsequently reversed the trial court on the grounds that the trial court erred by: (1) admitting into evidence the results of Gratzinger's testing of the manufacturers' airbag inflators because the testing did not constitute a statistically valid sample; and (2) improperly instructing the jury on strict liability in a design defects case. This Court thereafter granted discretionary review.

#### **I. ADMISSIBILITY OF EXPERT TESTIMONY BY ROBERT GRATZINGER**

Prior to trial, Toyota's expert, Robert Gratzinger conducted extensive testing of airbag inflators from a wide variety of different automotive vehicle models. Gratzinger explained at trial that his intent in testing a wide variety of inflators was to demonstrate the equally wide variety of inflation characteristics in airbags utilized by different manufacturers, and to demonstrate the fallacy of arguing that any particular airbag system is defective simply because it inflates more powerfully than the least powerful system on the market.

Gratzinger tested 78 inflators from 26 different vehicle models from the late 1980's to the middle 1990's. The 26 vehicles included models manufactured by Audi, BMW, Buick, Chevrolet, Dodge, Ford, Honda, Mazda, Mercedes, Mitsubishi, Nissan, Saab, and Volvo. Gratzinger stipulated that the vehicles he selected for testing were not intended to be a statistical cross-section or sample of the entire automotive industry.

The inflator testing was performed at facilities owned by an airbag supplier, following a procedure published by the Society of Automotive Engineers ("SAE") entitled

"Airbag Inflator Ballistic Tank Test Procedure," Recommended Practice J2238. This published protocol is regularly followed and generally accepted throughout the automotive industry. In fact, Gregory's expert, Broadhead, utilized the same protocol when he tested two Honda inflators.

The data collected by Gratzinger was set forth in a lengthy written report which was produced to Gregory's counsel well in advance of trial. The Gratzinger report contained all of the computer-generated graphs with the maximum pressure and maximum slope of each inflator tested. The same test results were compiled into two bar charts that were introduced at trial as Defendants' Exhibits. The results showed that some of Toyota's competitors utilized inflators which were more powerful than the Corolla inflator, while others utilized inflators which were less powerful. The evidence illustrated and supported Gratzinger's opinions that the deployment characteristics of the airbag system in question were usual and customary and not unreasonably dangerous, and further that the Corolla airbag system was in accordance with accepted industry standards and met state-of-the-art automotive and engineering practices.

Prior to trial, Gregory filed a motion in limine<sup>1</sup> to exclude the admissibility of Gratzinger's report and testimony, on the grounds that the data was intentionally skewed to put the Corolla in the low average inflation rates, by including in the tests vehicles having sizes, weights, and crash pulses very different from the Corolla's. Because these factors are relevant to airbag design and effectiveness, Gregory argued that the selection of vehicles for Toyota's test, including many vehicles not comparable to the subject Corolla, failed to follow any scientific methodology, making the evidence irrelevant and inadmissible pursuant to Daubert v. Merrill Dow Pharmaceuticals, 509

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<sup>1</sup> Gregory's motion did not request a KRE 104(a) hearing.

U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993) and Goodyear Tire and Rubber Co. v. Thompson, Ky., 11 S.W.3d 575 (2000).

Attached to Gregory's motion was the affidavit of a statistician and economics professor, Babu Nahata, Ph.D.<sup>2</sup> Dr. Nahata concluded that the inflators tested by Gratzinger were not selected in accordance with acceptable scientific methods because they were not randomly selected from the relevant population, and therefore, the testing was inappropriate, meaningless and no scientific and valid conclusions could be drawn from it.

Toyota responded that the test results were valid because the test methodology was scientifically reliable, and that the purpose of the testing was to illustrate Gratzinger's previously disclosed opinions, not to prove any statistical facts. The trial court denied the motion to exclude Gratzinger's testimony, ruling that Gregory's objections to the evidence went to its weight, not its admissibility. The trial court observed that Gratzinger was subject to cross-examination on the differences between the Corolla and many of the vehicles tested.

This Court has held that abuse of discretion is the proper standard of review of a trial court's ruling on the admissibility of expert testimony. Farmland Mutual Insurance Co. v. Johnson, Ky., 36 S.W.3d 368, 378 (2000); Goodyear Tire, *supra*, at 577-78; see also General Electric Co. v. Joiner, 522 U.S. 136, 143, 118 S.Ct. 512, 518, 139 L.Ed.2d 508 (1997). The test for abuse of discretion is whether the trial court's decision was arbitrary, unreasonable, unfair or unsupported by sound legal principles. Goodyear Tire, *supra*, at 581. In Sand Hill Energy, Inc. v. Ford Motor Co., Ky., 83 S.W.3d 483, 9 (2002), vacated on other grounds by Ford Motor Co. v. Smith, 538 U.S. 1028, 123 S.Ct.

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<sup>2</sup> Dr. Nahata had no involvement in this case other than the submission of the affidavit in support of Gregory's motion in limine. He was never disclosed as a witness, was not deposed, and did not testify at trial.

2072 (2003), we noted the considerable breadth of discretion possessed by trial courts in performing their gate keeping function under KRE 702, and emphasized that a reviewing court must "give great deference to the trial court's ruling and reverse only in circumstances of clear abuse."

When faced with a proffer of expert testimony under KRE 702, the trial court's task is to determine whether the expert is proposing to testify to scientific, technical or other specialized knowledge that will assist the trier of fact to understand or determine a fact in issue. Daubert, supra, at 589-92, 113 S.Ct. at 2794-2796; Goodyear Tire, supra, at 578. This calls upon the trial court to assess whether the proffered testimony is both relevant and reliable. Id. The consideration of relevance has been described as one of fit, while the consideration of reliability entails an "assessment into the validity of the reasoning and methodology upon which the expert testimony is based." Id. The central inquiry into the admissibility of expert testimony is therefore "an assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and whether that reasoning or methodology properly can be applied to the facts in issue." Daubert, supra, at 592-593, 113 S.Ct. at 2796; Goodyear Tire, supra, at 581. This Court first adopted Daubert in Mitchell v. Commonwealth, Ky., 908 S.W. 2d 100 (1995).<sup>3</sup> In Goodyear Tire, supra, we followed Kumho Tire Company, Ltd. v. Carmichael, 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999), and held that the Daubert analysis applies to all expert testimony, not just scientific testimony.

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<sup>3</sup> Mitchell was overruled in Fugate v. Commonwealth, Ky., 993 S.W.2d 931 (1999), but only as to the case-specific holding in Mitchell that the admissibility of DNA evidence in a criminal case should be determined on a case-by-case basis. Fugate held that the PCR and RFLP methods of DNA analysis are so well accepted that they are presumptively admissible under Daubert. Id. at 937.

Daubert and Goodyear Tire provide a non-exclusive list of factors to be considered by the trial court when determining the admissibility of an expert's proffered testimony:

- (1) whether the theory or technique can be and has been tested;
- (2) whether the theory or technique has been subjected to peer review and publication;
- (3) the known or potential rate of error in using a particular scientific technique and the existence and maintenance of standards controlling the technique's operation; and
- (4) whether the theory or technique has been generally accepted in the particular field.

Daubert, *supra*, at 593-94, 113 S.Ct. at 2796-2797; Goodyear Tire, *supra*, at 578-79.

The Daubert analysis is a flexible one, and the trial court may apply any or all of the four Daubert factors when determining the admissibility of any expert testimony:

In other words, a court may consider one or more or all of the factors mentioned in Daubert, or even other relevant factors, in determining the admissibility of expert testimony. The test of reliability is flexible and the Daubert factors neither necessarily nor exclusively apply to all experts in every case.

Johnson v. Commonwealth, Ky., 12 S.W.3d 258, 264 (2000).

Evidence of testing comparable products is relevant in a design defect case. Under Kentucky product liability law, a defendant may present evidence of other manufacturers' designs and how they perform, so that the jury can have a context for evaluating the design of the defendant's product and the reasonableness of the defendant's efforts. See Jones v. Hutchinson Manufacturing, Inc., Ky., 502 S.W.2d 66 (1973) (evidence of industry practice and designs utilized by other manufacturers admissible in product liability case); McKee v. Cutter Laboratories, Inc., 866 F.2d 219,

224 (6th Cir. 1989) (compliance with industry custom is evidence of non-negligence under Kentucky law, citing Jones).

Gratzinger's testimony is admissible under Daubert. The testing of the individual inflators was performed in accordance with a published, peer reviewed, unquestionably scientific and highly reliable protocol. It has little, if any, error rate and is generally accepted in the field of automotive engineering. Gregory's expert, Broadhead, even agreed that inflator test results are scientific engineering measurements. Further, contrary to the Court of Appeals conclusion, this was not statistical evidence. In other words, Toyota did not present this evidence to prove a fact based upon statistics. Rather, the jury was repeatedly informed that no attempt was made to present statistical averages or the Corolla's percentile rank within the industry. Thus, the Court of Appeals erroneously added an unprecedented new factor to the Daubert analysis: the requirement that expert testimony, not presented to prove a statistical fact, must nonetheless be derived from a statistically valid sample for admission at trial.

Furthermore, the inflator testing results were relevant because airbag inflation characteristics were placed squarely at issue by Gregory and her expert. The testing was intended to rebut Broadhead's testimony comparing the deployment characteristics of the Corolla inflator to just one other inflator, the Honda inflator. Gratzinger's testing illustrated his opinions that: (1) reasonable manufacturers can and do utilize inflators with different deployment characteristics, (2) Toyota's design was not atypical of designs used throughout the industry, and (3) the Corolla was not defective solely because its air bag inflated more rapidly than the Honda airbag.

Criticism of Gratzinger's selection of the inflators he tested goes to the weight of the evidence, not its admissibility. There was no risk that the jury would be misled or



confused because the results were admitted into evidence in the form of charts which were easy to read and understand. The jury was able to discern and consider for itself any differences in the types and sizes of the vehicles whose inflators were tested. "The trial court was aware of the difference between its role as gatekeeper and the jury's role in determining the weight evidence should have." Sand Hill Energy, Inc., supra.

## II. JURY INSTRUCTIONS

The trial court's design defect instruction required proof of a feasible safer alternative design as a prerequisite to a verdict in Gregory's favor. During a pretrial hearing on the admissibility of the inflator testing, Gregory's counsel acknowledged on the record her client's burden of proving an alternative design by stating, "Part of our proof, we have to prove there was an alternative design. The Honda had it in 1991. And that's part of our burden of proof in this case, to prove the alternative design." Nonetheless, Gregory objected to the instruction, arguing that evidence of a feasible alternative safer design is required only to overcome the presumption raised by statute that a product was not defective if it conformed to what is termed the state of the art in existence at the time of its manufacture. Toyota defended that finding of a feasible alternative safer design was consistent with the RESTATEMENT (THIRD) OF TORTS: Products Liability, §2(b) (1998), which provides that a product:

is defective in design when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller or other distributor, or a predecessor in the commercial chain of distribution and the omission of the alternative design renders the product not reasonably safe.

In a crashworthiness or enhanced injury case, the plaintiff claims not that a defect in a motor vehicle caused a collision, but that a defect in the vehicle caused injuries over and above those which would have been expected in the collision absent

the defect. The claim, in essence, is that the design of the vehicle failed to reasonably protect the occupant in a collision. These cases are also known as second impact cases, the first impact being the vehicle's collision with another object, and the second impact being the occupant's contact with interior structures or components of the vehicle. See Wemyss v. Coleman, Ky., 729 S.W.2d 174, 179 (1987) (reference to second impact cases in dicta).

The elements of a prima facie crashworthiness claim are: (1) an alternative safer design, practical under the circumstances; (2) proof of what injuries, if any, would have resulted had the alternative, safer design been used; and (3) some method of establishing the extent of enhanced injuries attributable to the defective design. See, e.g., Caiazza v. Volkswagenwerk A.G., 647 F.2d 241, 250 (2nd Cir. 1981); Huddell v. Levin, 537 F.2d 726, 737-38 (3rd Cir. 1976). While this Court has never explicitly recognized a crashworthiness claim, Kentucky federal courts have adopted the three elements outlined in Caiazza and Huddell.

In McCoy v. General Motors Corp., 47 F.Supp.2d 838, 840 (E.D. Ky. 1998), aff'd, 179 F.3d 396 (6<sup>th</sup> Cir. 1999), a crashworthiness case alleging a defective airbag system, the federal district court granted summary judgment in favor of the automobile company because the plaintiff had failed to “offer proof of an alternative safer design, practicable under the circumstances.” The district court again held that a plaintiff’s proof in such cases “must include competent evidence of some practicable, feasible, safer, alternative design” in Gray v. General Motors Corp., 133 F.Supp.2d 530, 535 (E.D. Ky. 2001), aff'd, 312 F.3d 240 (6<sup>th</sup> Cir. 2002) (Plaintiff “failed to offer the required proof of a feasible, alternative design or evidence to establish the extent of injuries he would have suffered had an alternative design been utilized in General Motors’ vehicles.”)

Decisions of this Court are implicitly consistent with the Federal decisions, albeit not specifically addressing the crashworthiness concept. In Jones v. Hutchinson Manufacturing, Inc., supra, a design defect case involving a grain auger, our predecessor court concluded that "[p]roof of nothing more than that a particular injury would not have occurred had the product which caused the injury been designed differently is not sufficient to establish a breach of the manufacturer's or seller's duty as to the design of the product." Id. at 70-71. In Ingersoll-Rand Co. v. Rice, Ky. App., 775 S.W.2d 924 (1988), the Court of Appeals also concluded that a strict liability design defect case involving an oil drilling rig could not be submitted to the jury without sufficient proof that "a different design would have been feasible and would have prevented [the plaintiff's] injury." Id. at 929. Recently, in Sand Hill Energy, Inc., supra, at 506-07, Justice Cooper in a dissenting opinion stated that Ford was entitled to a directed verdict because the plaintiff failed to present any competent evidence of a reasonable alternative design.

In Nichols v. Union Underwear Co., Ky., 602 S.W.2d 429, 433 (1980), this Court stated that the test is whether an "ordinarily prudent company . . . being fully aware of the risk, would not have put [the product] on the market." An ordinarily prudent company, with full awareness of the risks of its product, evaluates and weighs those risks to decide whether to put the product on the market as designed. A decision not to put the product on the market as designed leaves the company with two options – to use a safer alternative design, or not to put the product on the market at all.

The Reporters' Note to the RESTATEMENT (THIRD) OF TORTS: Products Liability, § 2 cmt. d (1998), observes that Kentucky applies a risk-utility test in design defect cases. After examining Kentucky decisions as Nichols, supra, Rice, supra, and

Montgomery Elevator Co. v. McCullough, Ky., 676 S.W.2d 776 (1984), the Restatement (Third) characterizes Kentucky as one of several jurisdictions that "apply a risk-utility test for defective design, thereby implicitly requiring proof of a reasonable alternative design without explicitly doing so." Id.

While the feasible, alternative, safer design provision in the trial court's instruction may have been extraneous, it was certainly not erroneous or prejudicial. Kentucky law, as stated in Jones, supra, and Rice, supra, stands for the proposition that design defect liability requires proof of a feasible alternative design. Federal courts applying Kentucky law in crashworthiness cases have reached the same conclusion. Gray, supra; McCoy, supra; Clark v. Chrysler Corp., 310 F.3d 461, 477-78 (6th Cir. 2002); O'Bryan v. Volkswagen of America, 39 F.3d 1182 (6th Cir. 1994) (unpublished), cert. denied, 514 U.S. 1032 (1994). As such, while it was not required to do so, the trial court did not err in instructing the jury that it must find proof of a feasible alternative safer design.

Accordingly, we reverse the Court of Appeals and reinstate the judgment of the Jefferson Circuit Court in favor of Toyota Motor Corporation. We decline to expressly adopt the RESTATEMENT (THIRD) OF TORTS and leave that decision for another day.

Cooper, Graves, Johnstone, and Wintersheimer, J.J., concur.

Stumbo, J., dissents in a separate opinion in which Lambert, C.J., and Keller, J., join.

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## DISSENTING OPINION BY JUSTICE STUMBO

Respectfully, I must disagree with the majority opinion's conclusion that although the feasible, alternative safer design provision in the trial court's instruction "may have been extraneous, it was certainly not erroneous or prejudicial." I concur fully with the Court of Appeals' decision on this issue. KRS 411.310(2) establishes a rebuttable presumption that a product is not defective if its design and manufacture conformed to the state of the art at the time of design and manufacture. This creates a presumption, which the plaintiff must overcome to get a case to the jury. Once with the jury, the sole question is whether the product is defective. As the Court of Appeals neatly stated:

Rather than make that determination as the statute requires, the trial court here included the presumption in the jury instructions and effectively passed the determination of whether or not the presumption was overcome, a question of

law, to the jury. Further, the instruction wrongly imposed a greater than normal burden on the plaintiff by requiring her to prove more than Kentucky law requires in similar cases.

Slip op. at 4-5.

I would affirm the Court of Appeals in its remand for a new trial with a properly instructed jury.

Lambert, C.J., and Keller, J., join this dissent.

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## ORDER CORRECTING OPINION

On the Court's own motion the opinion rendered May 20, 2004, in the above styled case is hereby corrected with the substitution of pages 1, 2, and 5 attached hereto.

The correction of these pages does not change the holding of this opinion.

ENTERED: June 14, 2004.

  
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Chief Justice