
SCIENCE FOR JUDGES

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This issue of the *Journal of Law & Policy* introduces a new feature: articles that deal with scientific issues that confront judges when they handle litigation in the twenty-first century. These articles are a felicitous outgrowth of a grant from the Common Benefit Trust established in the Silicone Breast Implant Products Liability Litigation to hold a series of conferences at Brooklyn Law School for federal and state judges to discuss complex questions that arise at the intersection of science and the law. The programs, under the auspices of Brooklyn Law School's Center for Health Law and Policy, are being presented in collaboration with the Federal Judicial Center, the National Center of State Courts, and the Panel on Science, Law and Technology of the National Academy of Sciences. The pieces that follow are expanded and edited versions of papers that were originally presented by Drs. Eaton and Weed at the first Science for Judges program in March 2003.

The explosive growth of science and technology in our society has been mirrored by the increasing number of scientific and technological issues that arise in litigation. Particularly troublesome for the courts have been the difficult determinations about causation that arise in toxic tort cases when plaintiffs claim that exposure to a defendant's product caused their injuries or disease. These are cases in which a great deal is at stake beyond compensation for the claimants and others adversely affected, even though the amounts claimed as damages may be enormous. An erroneous decision for the defendant may leave a dangerous product on the market and may persuade other corporations that

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they risk little by not taking more stringent precautionary measures to protect the public. On the other hand, litigation may result in a valuable product being taken off the market, serious, perhaps fatal, financial harm to a defendant, congestion in the courts, and immense transaction costs.

The crucial issue in these cases is almost always causation, proof of which must be provided by expert witnesses. Given the huge stakes in toxic tort cases, as well as escalating complaints about courts admitting “junk science,”¹ it is probably not surprising that the use of expert testimony to prove causation captured the Supreme Court’s attention. In the past decade, the Supreme Court has issued a trilogy of opinions dealing with the admissibility of expert proof. The first two cases, *Daubert v. Merrill Dow Pharmaceuticals, Inc.*² (1993) and *General Electric v. Joiner*³ (1997), were toxic tort cases. In *Daubert*, the plaintiffs claimed that Benedectin, a drug used to control morning sickness in pregnant women, caused birth defects in their children. In *Joiner*, the plaintiff alleged that exposure to PCBs promoted his lung cancer. The third case, *Kumho Tire Co. v. Carmichael*⁴ (1999), although not a toxic tort case, was a product liability action in which proof of causation was central; the plaintiff’s expert claimed that the rollover of a minivan, resulting in serious injuries and death, was caused by a defective tire.

The trilogy imposed new obligations on the federal trial judge with regard to expert testimony. It anointed the judge as the “gatekeeper” who must screen all proffered expert testimony for relevancy and reliability before allowing it to be heard by a jury. Consequently, in a case that turns on science, if the court finds that a party’s scientific proof is not reliable—that is, not scientifically valid—the expert seeking to offer an opinion based on such

¹ This phrase, which was given currency by Peter Huber’s book, *GALILEO’S REVENGE: JUNK SCIENCE IN THE COURTROOM* (1991), was hardly the first attack on expert witnesses. Learned Hand was fulminating about venal experts at the turn of the last century. See Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40 (1901).

² 509 U.S. 579 (1993).

³ 522 U.S. 136 (1997).

⁴ 526 U.S. 137 (1999).

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evidence will not be allowed to testify. Because causation is a necessary element of a plaintiff's toxic tort case, exclusion of the plaintiff's expert on causation will result in summary judgment for the defendant. The trilogy also established that when an appellate court reviews a trial judge's ruling on admitting expert proof, it must use an abuse of discretion standard, deferring to the ruling of the lower court unless it is manifestly erroneous.

Obviously, the Supreme Court trilogy has given enormous power and responsibility to the federal district courts in making them the gatekeepers who often have the final say on the admissibility of all expert testimony. And the trilogy has had an impact on state trial judges as well. By now, a majority of the states have opted to adopt some version of the federal approach, and even in states that have not formally adopted the trilogy, judges appear to be subjecting expert testimony to greater scrutiny. It is the difficulties that judges now face in having to identify sound science that led to the establishment of the Science for Judges Program.

In toxic tort cases, the judicial screening burden is particularly onerous. Few judges come from educational backgrounds which provide them with the scientific and statistical training needed to understand and evaluate the validity of the epidemiological, toxicological, and clinical proof they are likely to encounter. Furthermore, the etiology of many diseases is as yet unknown. We are only on the threshold of unraveling genetic information and understanding how interactions between genetic and environmental factors can lead to adverse health effects. As a result, the judge ruling on the admissibility of expert proof may be hampered not only by his or her lack of scientific expertise, but also by the scientific uncertainty surrounding the question on which an expert seeks to testify and consequent disagreements among scientists and scientific disciplines.

Because toxic tort cases have played such an important role in focusing judicial attention on scientific proof in the courtroom, and because these cases raise issues of grave societal concern, it seemed only fitting to devote the first Science for Judges program to an overview of issues that bear on proving causation in toxic tort cases. Dr. Eaton's paper examines what can be known through the

application of basic toxicological principles. Dr. Weed surveys and critiques epidemiologists' methodology in drawing causal inferences.

Subsequent issues of the *Journal of Law & Policy* will publish other papers that were presented at Science for Judges programs. It is hoped that these articles will assist not only the participants who attend these programs but also a broader constituency of the legal community that reads these pages.