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SCIENCE IN THE COURTROOM

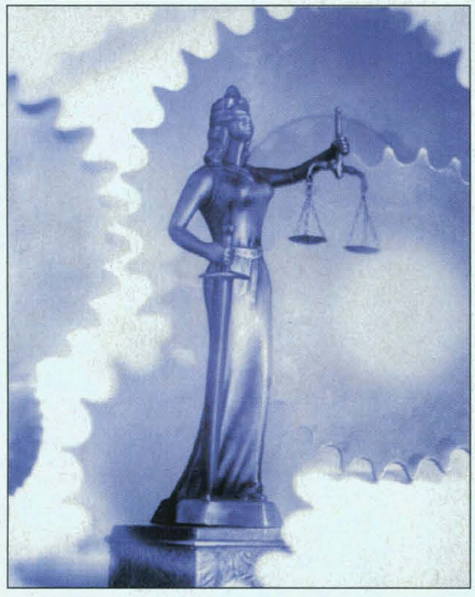
Should Engineer Witnesses Meet Same Standards as Scientists?

Five years ago the U.S. Supreme Court gave trial judges more authority to throw out testimony from scientists that doesn't meet strict tests of scientific validity. Now the court may be ready to rule on whether judges should apply the same rules to testimony from other kinds of technical experts.

The high court has agreed to rule on a case, *Kumho* v. *Carmichael*, involving the testimony of an engineer who claimed that a defective tire led to an accident. At issue is whether his testimony should have to meet scientific standards. Late last month the National Academy of Engineering (NAE) filed a brief in support of the tire company, urging the court to set the same rules for engineers in this case that it does for scientists. But the case is likely to extend far beyond the engineering community to everyone from accountants to forensics experts. "The extension to engineering is an important clarification, but in the background is the whole question of how medical testimony is going to be treated," says Joe Cecil, a researcher at the Federal Judicial Center in Washington, D.C., who found in a 1991 study that 40% of expert witnesses in federal civil cases are from medical and mental health fields and only 10% are scientists.

Although pro-business groups have lined up in support of the principle that technical testimony must be grounded in rigorous science, organizations that represent people who bring product liability suits argue that crucial evidence from many kinds of experts who do not publish their findings could be shut out. "It could really undermine the ability of experts to testify based on their experience and knowledge," says Sarah Posner of Trial Lawyers for Public Justice, a group in Washington, D.C.

The backdrop for Kumho is a 1993 decision, *Daubert* v. *Merrel Dow Pharmaceuticals*, in which the Supreme Court called for trial judges to act as "gatekeepers" and screen out unreliable scientific testimony (*Science*, 2 July 1993, p. 22). Until then, the prevailing standard was whether testimony was generally accepted by the scientific community. The court said judges should instead use four criteria: empirical testability, peer review and publication, rate of error of a technique, and its degree of acceptance. In some cases this has helped to get novel technologies into courtrooms, including DNA evidence, notes Cecil. But more often it has allowed judges to exclude testimony, especially in product liability cases, deemed to lack scientific validity.



ANN ELLIOTT CUTTING

The Supreme Court left open whether *Daubert* could be used to assess other kinds of expert testimony, and circuit courts have been split on the issue. In *Kumho*, a minivan owned by the Carmichael family of Alabama blew a tire in 1993, leading to an accident that killed one of their children. The family sued Samyang Tire Inc. (now Kumho Tire Co.), the tire's manufacturer, offering testimony from a mechanical engineer who claimed a defect had caused it to fail. A trial court rejected the testimony, saying it didn't meet the four *Daubert* factors, and dismissed the case. But the 11th Circuit Court found that it was wrong to apply the *Daubert* principles, ruling that the engineer's testimony was "more like a beekeeper['s]" than a scientist's because it relied on observations and experience.

Kumho's lawyers argue that expert engineers should meet the *Daubert* standard and that this would "drive the quality of such expert evidence in the right direction by ensuring the reliability of their analyses and methods before admitting their testimony." Washington, D.C., attorney Richard Meserve, who filed the NAE's amicus brief, agrees: "Should engineering [be subject to the same] reliability call? The brief says yes … especially where something failed."

The families have yet to file their brief, but they argued in a response to Kumho's petition that the tire expert's testimony shouldn't be judged by the *Daubert* criteria because it was "based upon technical and specialized knowledge as opposed to his application of scientific principles and theories." Their attorney, Robert Hedge of Mobile, Alabama, says that although *Daubert* may apply to some types of nonscientific testimony, there are "literally thousands of areas of expertise," from tire analysis to a surgeon's assessment of a herniated disk, where an expert's opinion is based on experience and "there's no error rate, no peer review, and it can't be tested."

Some legal observers say that requiring judges to apply *Daubert* to all technical experts could cause confusion. "Peer review and publication in some careers just doesn't make any sense," says Margaret Berger of Brooklyn Law School. The reliability of the testimony is more important than whether it meets *Daubert* criteria, she says.

Berger adds that "I think a lot of this is, 'My discipline is as good as your discipline.' " In a sense, NAE agrees. It asserts in its brief that engineering "is founded on scientific understanding" and can be judged by the same principles. **–JOCELYN KAISER**

MICROBIOLOGY

Cattle Diet Linked to Bacterial Growth

Food safety experts have been losing ground against bacterial contamination. The most threatening strains, like *Escherichia coli* O157:H7, continue to pop up in spite of increasingly stringent food safety standards, be it in beef from a Nebraska-based company, Japanese radishes, or Wyoming tap water. On page 1666, a research team from the U.S. Department of Agriculture (USDA)