

SCIENCE IN THE COURTROOM  
TO ADMIT OR NOT TO ADMIT, THAT IS THE QUESTION

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ABSTRACT:

The courtroom has become a battlefield of "dueling experts", some of whom rely upon unproven theories, questionable testing and speculative conclusions. Some experts readily espouse scientific theories and relationships from the witness stand which they would be reluctant to submit to peer-review scrutiny. Courts are beginning to scrutinize and reject certain types of evidence.

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Litigants often seek to supplement the factual presentation of their cases by offering the opinion testimony of expert witnesses. Such opinion testimony is frequently used to develop or defeat causation, that is, whether defendant's acts or products caused plaintiff's alleged injuries. Although litigants would undoubtedly like a free reign in their selection and presentment of experts, courts are becoming more involved in evaluating whether the jury ever gets to hear the opinions sought to be introduced into the record.

The Federal Rules of Evidence ("FRE") permit receipt into evidence of expert opinion. Rule 702 provides that:

If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

If a witness is found to be qualified as an expert, that does not give the witness carte blanche to testify about whatever strikes his or her fancy. Rather, Rule 703 of the FRE contains the boundaries of an expert's admissible testimony. That rule provides, in pertinent part, that an expert's opinion must be "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject."

However, Rule 403 of the FRE places "judicial brakes" on the receipt of expert testimony. Pursuant to Rule 403, evidence may be excluded if its probative value is not substantially outweighed by its prejudicial effect, its confusion to the trier of fact or if its misleading.

The difficult question that Courts face is how to determine whether the proffered scientific evidence meets these requirements. Below is a brief discussion of a few different types of expert testimony which has been challenged as inadmissible.

1. Speculative Expert Testimony.

The starting place to determine whether a witness may offer expert opinion is for the Court to determine if that person is, indeed, an expert. Witnesses holding advanced degrees or expertise in one field may try to offer opinions about disciplines of which they do not possess the requisite training or experience. See, In Re Air Crash, 795 F.2d 1230 (5th Cir. 1986); Will v. Richardson-Merrill, Inc., 647 F. Supp. 544 (S.D.Ga. 1986). Although some courts have been most liberal in permitting experts to provide opinion testimony, some courts have not permitted Ph.D.'s to opine on the medical cause of human illness. See, e.g., In Re Paoli Railroad, 706 F.Supp. 358 (E.D. Pa. 1988); Padgett v. U.S., 553 F.Supp. 794 (W.D.Texas 1982).

In addition, Courts have rejected the testimony of experts who are nothing more than advocates, rather than objective professionals. See, Johnston v. U.S., 597 F.Supp. 374, 411 (D. Kansas 1984). One way a witness steps over the line into advocacy is by forming an opinion at the outset, before research or investigation has begun. See e.g. Viterbo v. Dow, 646 F.Supp 1420 (E.D. Texas 1986), aff'd 826 F.2d 420 (5th Cir. 1987).

Courts are also becoming leery of witnesses who express opinions which they would not be willing to subject to peer review. This may signal that the proffered opinions are nothing more than speculation dressed up by academic credentials. See e.g. In Re Air Crash, 795 F.2d at 1233.

2. Use of Animal Data As The Bases For Expert Opinion.

Chemical exposure cases frequently involve experts who seek to bolster their opinions by citing to animal studies as the basis of their opinions. However, Courts are beginning to reject this type of testimony, questioning their probative value. In Lynch v. Merrell-National Labs, 646 F.Supp 856 (D.Mass. 1986), aff'd 830 F.2d 1190 (1st Cir. 1987), the district court rejected an expert's reliance of in vivo and in vitro animal studies conducted on a prescription drug. The court noted the following as factors supporting its holding: (1) animal studies use large doses of materials, making it difficult to extrapolate to humans; (2) adverse effects observed in one animal

species do not mean similar effects will occur in humans, or even in other animal species;; and (3) that almost any substance can be shown to have adverse effects at some dose level. 646 F.Supp. at 865. See also, Viterbo v. Dow, 826 F.2d at 424.

Similarly, in Richardson v. Richardson-Merrell, Inc., 857 F.2d 823 (D.C. Cir. 1988), the Circuit Court of Appeals rejected testimony about adverse effects found in animal studies of a prescription drug. The Court found them to be of little probative force and to be misleading, especially in light of extensive epidemiological studies in which no adverse effects were found. 857 F.2d at 831. See also, In Re Agent Orange, 611 F.Supp. 1223 (E.D.N.Y. 1985), aff'd, 818 F.2d 145 (2d Cir. 1987).

In Re Paoli Railroad, the Court considered the appropriateness of reliance on animal studies. It found that they may be of value to regulatory agencies which are charged with assessing the potential risk to public health. However, the Court determined the animal studies were wholly irrelevant in the context of tort litigation, where the question is whether the complained-of product caused plaintiff's injury. 706 F.Supp. at 367.

### 3. Epidemiological Evidence - Sword or Shield.

As noted above, courts may reject the receipt of testimony based on animal studies, especially when there may be human epidemiological data on point. What does a defendant do when faced with seemingly adverse epidemiology studies offered by the plaintiff?

As with any expert evidence, epidemiology studies can be challenged using Rules 403, 702 and 703 of the FRE. Under those rules, expert evidence, even epidemiological data, must be, at a minimum, accurate and reliable. See, In Re Agent Orange, 611 F.Supp. at 1256; Robinson v. U.S., 533 F.Supp. 320 (E.D. Mich. 1982).

Furthermore, all "studies" are not created equal. For example, when faced with overwhelming epidemiological evidence in which no demonstratable no association between the product and the claimed injury was found, plaintiff's expert may "reanalyze" the published data, and reach opposite conclusions. This type of "study" was rejected in Lynch v. Merrell-National Labs, 646 F.Supp. at 865.

Experts may try to cite to epidemiological studies as proof that a particular product caused plaintiff's injuries. However, these types of studies merely look for trends or associations in populations, but cannot definitely establish causation in an individual. See, Robinson v. U.S., 533 F.Supp. 320, 330 (E.D. Mich. 1982).

Since many associations can be gleaned from collected data, only those associations which are "statically significant" that is sufficiently certain that the association did not result from random chance, are meaningful. See Rothman, Modern Epidemiology, Little, Brown & Company (1986); Richardson v. Richardson-Merrell, Inc., 649 F.Supp. 799 (D.D.C. 1986). In the context of civil litigation, decisions are generally based on a standard of preponderance of the evidence, or more likely than not. See In Re Paoli Railroad, 706 F.Supp. at 374. The statistical equivalent would be 51%. The defense must be mindful of attempts by plaintiff's experts to confuse the concepts and rely upon epidemiological associations which are merely based on preponderance of the evidence, rather than statistical significance.

Conclusion:

The courtroom is fast becoming a de facto substitute for peer-review of scientific theories and studies. As a result, courts must be more circumspect in their decisions to admit expert testimony, and not rely on a jury of laymen to "give it the weight it deserves."