



## SPECULATIVE VERSUS FACT-BASED OPINION IN TOXIC TORT LITIGATION

ICTM has found over the years that many attorneys and judges, despite their learned backgrounds, experience difficulty, at times, distinguishing expert opinions which are speculative from those which are solidly-founded in scientific fact. Often times, conjecture is accepted as readily as fact-based opinion because it came from an “expert.” The “battle of the experts” is commonly believed to be just that: one person’s opinion versus another’s. The idea that expertise is fungible fits well with modern relativistic notions generally—that ideas, beliefs, morals, etc.—are all relative; everyone has his/her own opinion, each as good as the others. This is especially true when the contradictory opinions are those of two or more highly-educated experts.

This perception of scientific relativism in the scientific/legal arena is prevalent. Last month, after Dr. Cheung’s presentation on Indoor Environmental and Air Quality (IEAQ) at the annual DRI toxic tort meeting, an attorney asked whether differences in expert opinions simply pitted one expert against another. While it may seem logical to answer otherwise, the answer is, “No.”

On another occasion, Dr. Gots presented to a class of judges at the National Judicial College, on the topics of basic toxicology and epidemiology. One hour was devoted to the methods of experimental design in epidemiology. There, Dr. Gots emphasized confounders and the need to control for those, e.g., cigarette smoking in a group being studied for lung disease. He explained selection bias and the essentials of randomization. He emphasized the need for properly-selected control populations and the importance of statistical significance. These are not controversial topics. Rather, they and others are at the very heart of a competently-performed scientific study. Without those and many other design elements, little meaning can be gleaned from the results of a study. Scientific knowledge is predicated upon such proper experimental methodologies. At the end of this presentation, one judge, obviously skeptical and seemingly-uninterested in the scientific methods discussed, asked the following question: “Are you trying to tell me, Doctor, that if a claimant working in a particular plant gets cancer and someone else in that very same plant got cancer that I shouldn’t let the jury know that?” The answer, of course, is that offering such information would be misleading and non-scientific. Two cases out of a workforce of three thousand do not constitute a proper experimental methodology like an epidemiological study and, therefore, no scientific conclusion or knowledge may be derived.

Scientific and medical facts are not subject to the whims or opinions of opposing experts. Attorneys must be able to distinguish between fact-based opinions and ones that are purely speculation. Absent that ability, counsel cannot effectively deal with their own or opposing experts’ pretrial motions to exclude testimony based on speculative opinions. In this brief report, ICTM cannot provide a comprehensive review of the subject, but we will illustrate this point of scientific knowledge versus opinion with a few examples.

Let’s begin with a trivial and obvious example purely to illustrate the difference between scientific knowledge and opinion. What if an expert were to opine that fluorescent lights in a worker’s office caused her breast cancer? Since there is neither scientific evidence that fluorescent lights can cause breast cancer, nor a plausible biological mechanism for such a relationship, any causation testimony linking the two abject speculations, is not scientifically-supportable.



Moving from a fantasy to a more reasonable example, let's consider benzene. Assume that an individual, who was heavily-exposed to benzene (say 1000 ppm/years) years ago when such exposures occurred, develops acute myelogenous leukemia (AML). What is known scientifically is that benzene is capable of producing that specific disease. It is also generally known that the level of exposure noted is sufficient to be causal. Assuming the latency period is sufficiently long and other specific causation elements are met, one could reasonably connect this disease in this person to that exposure. Now, the actual scientific knowledge in this case is general causation. Applying that to this person's disease is still an inductive specific causation process, requiring scientific opinion for a variety of reasons. For example, AML can and does occur without benzene exposure. However, most toxicologists and hematology/oncology experts would weigh this evidence in support of an affirmative causation opinion. Such an opinion would be based on sound science, not speculation.

If, however, that same individual developed prostate cancer, scientific knowledge would be unresponsive of a causal attribution. Why, because benzene is not known to and has never been shown to cause prostate cancer. Any expert testifying for a claimant in that matter would have to make a general causation argument based on tangential, speculative opinion rather than scientific knowledge. For example, he might say, "Any carcinogen can cause cancer anywhere." Such a statement is surely his speculation, not scientific knowledge or fact.

Relevant to many of today's claims are the low-level benzene exposure matters. If an individual with trivial workplace exposure to trace benzene residues in other products (say 1 ppm/years) develops AML, the allegation that the disease was caused by benzene is pure speculation, since this position is unsupported by published scientific literature and is not scientific knowledge.

It is important that counsel recognize that certain elements of any expert causation opinion may either be scientifically-known, or purely the expert's own personal conjecture, unsupported by science. Some readers may realize that this discussion oversimplifies the issue because there may be many published papers on a subject which do not permit a simple dichotomous separation into those two classifications. In some instances, elements of causation may or may not be well-established scientifically, particularly general causation. In other instances, elements of specific causation which always rely on the weight-of-evidence to reach an inductive conclusion may be well-supported or poorly-supported.

Through in-depth consultation with their medical experts, counsel should attempt to determine whether their experts' and opposing experts' testimony is more heavily scientifically-based or speculatively-based and which elements of that testimony fall into which category. This knowledge will permit counsel to be more effective presenters of their cases to judges and juries.

One of the many elements that has some, but limited, relevance to the question of speculative- versus fact-based opinion is the issue of peer review. The fact that an issue has been peer-reviewed does not establish scientific knowledge. The fact that an issue has not been peer-reviewed, however, argues strongly against a knowledge-based position. If you are interested in additional information about the meaning of "peer review," please send us an email at [info@ictm.com](mailto:info@ictm.com) and simply put "Request for peer review information" in the subject line.