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978-1-107-15196-3 - Toxic Torts, Second Edition: Science, Law, and the Possibility of Justice

Carl F. Cranor

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TOXIC TORTS, SECOND EDITION

U.S. tort law, cloaked behind increased judicial review of science, is changing before our eyes yet we cannot see it. While Supreme Court decisions have altered how courts review scientific testimony, the complexity of both science and legal procedures mask the resulting social consequences. Yet these consequences are too important to remain hidden. Mistaken court reviews of scientific evidence can decrease citizen access to the law, decrease incentives for firms to test their products, lower deterrence for harmful products, and decrease the possibility of justice for citizens injured by toxic substances. Even if courts review evidence well, increased in litigation costs and attorney screening of clients can impede access to the law.

Newly revised and expanded, *Toxic Torts, Second Edition*, introduces these issues, reveals the relationships that can deny citizens just restitution for harms suffered, and shows how justice can be improved in toxic tort cases.

Carl F. Cranor is Distinguished Professor of Philosophy, a faculty member of the Environmental Toxicology Graduate Program, and a Distinguished Teaching Professor at the University of California, Riverside, conducting research on science and the law. His books include *Regulating Toxic Substances* (1993) and *Legally Poisoned* (2011).

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Toxic Torts, Second Edition

SCIENCE, LAW, AND THE POSSIBILITY OF JUSTICE

CARL F. CRANOR

University of California, Riverside



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For Crystal, Chris, and Taylor

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Preface

The tort or personal injury law is the main part of the legal system that provides redress for injuries suffered. It is tempting to say that it has changed before our eyes, except we cannot see it. These modifications are occurring because three Supreme Court decisions – *Daubert v. Merrell Dow Pharmaceutical, Inc.*, *General Electric v. Joiner*, and *Kumho Tire v. Carmichael* – increased judicial screening of expert (largely scientific) testimony in litigation before experts could testify before a jury. However, it is difficult for all but the best informed to comprehend them. Some who understand them welcome them, some do not, and some will have more mixed assessments of them. However, most citizens cannot even have an opinion on the relevant issues because they are unaware of them and because the topics themselves are not easily accessible. The barriers to understanding the resulting legal changes are the result of subtleties most of us never think about – issues about scientific evidence and reasoning, and legal procedures that are complex and inaccessible to most of us.

The actual and potential transformations of this part of our legal system are too important to remain hidden and too important for an informed citizenry to be left in the dark about them. Citizens risk having their access to the tort law and the possibility of restitution for injuries within it reduced and they will not know it. Judges and lawyers are at risk of being manipulated by slogans about “sound science,” not realizing there are more scientifically accurate and legitimate ways to think about science, law, and the interaction between the two. There is even a risk to the legitimacy of the law itself, if mistaken scientific arguments are used to frustrate its aims. The issues posed by the potential changes in our legal system are not easy, however. In order to “see” and to better appreciate them, we must understand more about some of the procedures that occur before trial, not something most of us know. We also must understand some basics of the sciences that assist in revealing human harm from exposure to toxic substances. In addition, there are subtleties about these sciences and different evidentiary patterns of harm that must be appreciated. Too

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simplicistic a view of the subjects will inadvertently skew the science, the law, and our protections under it.

This book considers these issues. I have sought to introduce those not familiar with legal procedures to some of the basics of the law to locate the legal issues. I also have sought to introduce those not familiar with some of the basics in the relevant sciences to such information. However, in order to understand subtler points about law and science and their joint consequences, the discussion must go further. To assess the reasons for and the impact of judges' decisions permitting or preventing experts from testifying, we need to appreciate some of the finer points about different kinds of scientific evidence, how it can be integrated to show harm, and how scientists utilize studies in order to arrive at judgments that a substance has contributed to harm. In short, one cannot shrink from grappling with some of the details of scientific evidence and reasoning. I have tried to address these issues, but in a way that provides the reader with an understanding of how the interaction between science and the tort law can profoundly affect our realistic access to the legal system, our possibilities of justice within it, and deterrence of wrongful behavior or harmful products.

I have updated the second edition of this book because of changes in both the law and science. Some substantial scientific changes in what scientists know and how it is utilized have come to prominence at national and international scientific organizations such as the International Agency for Research on Cancer and the National Toxicology Program. The law has also developed to be more consistent with science, but there remains more to do.

In adjudicating expert testimony in *Rosen v. Ciba-Geigy Corp.* Judge Richard Posner of the Seventh Circuit Court of Appeals coined the aphorism, "Law lags science; it does not lead it." He was concerned that testifying experts should back up their scientific claims made in court with appropriate evidence. When none was presented in that particular case, he ruled that a distinguished cardiologist's testimony was properly excluded.

I consider Judge Posner's claim from another direction. Since at least 1987, six years before *Daubert v. Merrell-Dow Pharmaceutical, Inc.*, the science of toxicity has been well *ahead* of what many judges would permit to support scientific testimony post-*Daubert*. The law has lagged science much too far and continues to do so. This was a theme of the first edition, but with scientific advances, the second edition finds an even greater gap. Scientists simply understand and utilize a wider range of studies to assess the toxicity of substances to people than some courts permit in the courtroom. Toxic chemicals are harming people, scientists know this, but some judges have difficulty permitting appropriate scientific arguments in court.

For many years animal data importantly informed scientific research and the deliberations of consensus scientific committees such as the International Agency for Research on Cancer (IARC) and the U.S. National Toxicology Program (NTP) about the toxicity of substances to people. Yet animal studies have fared poorly in

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courts. Beginning about 1993, but accelerating more recently mechanistic and other molecular data have taken on greater scientific prominence. Following closely on the *Daubert* decision some (many?) courts required human epidemiological evidence and too often did not permit experts to support expert testimony with a wider range of nonhuman evidence, a point I labelled “Excellent Evidence Makes Bad Law.” Now scientific committees recognize that mechanistic evidence can be so powerful that it can replace human statistical data or animal studies leading to assessments that a substance can cause cancer in humans.

Consequently, the kinds of evidence that can be integrated to conclude that a substance can be toxic to humans has become more disparate and variegated. Human data often are not available for many substances. Scientists who seek to understand the toxicity of substances utilize other types of evidence. They also have substantial experience in integrating a wider range of different types of evidence to determine what they show about the toxicity of products.

Common arguments familiar to philosophers – who call them “inferences to the best explanation” – and to scientists – who call them “weight of the evidence arguments” – facilitate understanding such evidence. All of us implicitly utilize such inferences daily, yet they can seem mysterious. Moreover, they have not always fared well in the courts and some critics have misleadingly maligned them. Recently, some courts have begun to properly recognize such arguments.

However, in order for the law to better achieve the goals of the *Daubert* line of cases, courts must become more sophisticated in understanding the range of scientific data that can support causal claims and the arguments that incorporate them. Also the lawyers and experts involved must be better prepared to explain the role of newer science and the reasoning that supports testimony.

The first edition of *Toxic Torts* noted various ways that the law lagged science – courts were requiring scientific evidence that many distinguished international scientific committees would not insist on in order to conclude that exposure to a substance could cause a particular disease. They also prevented experts from relying on types of data that scientists would routinely utilize for a causal conclusion.

At the same time there has also been progress in some legal cases that better adjudicate the science in support of expert testimony. The First Circuit Court of Appeals’ *Milward v. Acuity Specialty Products, Inc.* (2011), is something of a sentinel case on this dimension. Earlier legal cases had come to some of the same conclusions about judge-jury responsibilities, about how to adjudicate expert testimony, and about how to review different kinds of scientific studies. However, *Milward* assimilated strands present in the law and crystalized an improved approach for assessing experts’ testimony in toxic tort cases.

This second edition updates aspects of science and the law to reflect advances in both. The book aims to introduce a wider educated audience to the issues, but also to speak to legal scholars, practitioners, and judges. Readers familiar with some topics can skip or skim some chapters quickly.

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Some material in Chapters 1, 2, and 3 has been updated. Legal scholars and practitioners will know the material in Chapter 2; it is more aimed at general readers (including scientists) who might want to know some critical details about the law. Chapter 3 raises some questions about the leading legal cases that modified the review of expert witnesses. Informed legal scholars could review the topics quickly, but legally less informed readers would be alerted to tensions in the decisions and to issues of interpretation.

The previous Chapter 4 has been divided into two: a new Chapter 4 on different types of scientific evidence with more on mechanistic data (with examples), and a new Chapter 5 on scientific reasoning. Topics of Chapter 4 will be quite familiar to scientists or many science students, but legal scholars and practitioners may find the varieties of evidence informative.

The new Chapter 5 has been updated to reflect advances that I have noted about scientific reasoning in presenting some of this material, talking to scientific colleagues, giving advice, and occasionally participating in litigation. I have also observed how critics seek to denigrate scientific reasoning. Some of what I earlier called “scientific judgment” actually reflects considerable reasoning about evidence combined with a scientist’s background knowledge leading to conclusions. This is almost certainly underappreciated. Importantly, *Milward v. Acuity Specialty Products* and some other courts have begun to recognize and endorse such reasoning. Inferences to the best explanation are hardly newcomers to scientific discussions or to philosophic recognition (early versions go back to the late nineteenth century).

The previous Chapter 5 (Excellent Evidence Makes Bad Law) is now Chapter 6 with some revisions. After the *Daubert* litigation, judges and others may believe that most toxic tort cases will have excellent evidence (statistically significant human studies) in support of claims of toxicity. However, this is frequently enough not true that courts should modify their approaches so that they do not lag the science as far as they have in the past.

Current Chapter 6 (“Science and Law in Conflict”) now becomes Chapter 7 and has been shortened to the extent that the topic permits. Major tensions developed between science and the law as courts began to implement the *Daubert* trilogy of cases; this chapter illustrates how far some courts have lagged behind science.

A new Chapter 8 (*Milward v. Acuity Specialty Products: Toward Clarifying Legal and Scientific Issues*) presents some legal and human history from *Milward v. Acuity Specialty Products*. (Full disclosure: I had a role in the case as an expert witness.) It shows an appellate court recognizing both the importance of weight of the evidence arguments and adjudicating a body of varied and disparate evidence (including mechanistic data) sufficient to support expert testimony. This court properly understood scientific arguments and data better than many others have.

A substantially modified Chapter 9, previously Chapter 7 (Enhancing the Possibility of Justice under *Daubert*), proposes a model for reviewing expert testimony based on *Milward* and other cases better aligned with how scientists approach similar

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issues. It also illustrates how scientists themselves integrate various disparate lines of evidence to conclude that exposure to a chemical or other product can be toxic to humans.

Finally, Chapter 10, previously Chapter 8, has been renumbered and the title changed: “What has *Daubert* Wrought?” It addresses some broader issues that seem pertinent following *Daubert*. What should we make of the *Daubert* changes? Are there other changes that would make it function better? It is now clear that *Daubert* has reduced injured parties’ access to the law and increased procedural hurdles when they seek redress for injuries suffered. To what extent will suggestions made earlier in the book assist these? I have tried to present some of the actual and potential transformations in toxic tort law as a result of recent legal decisions and how it could better incorporate and utilize complex scientific evidence in the future to achieve its goals. I hope this helps others to think further about the issues and to better understand this part of our legal system.

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In the intellectual gestation that is needed for a project such as this, I received invitations to contribute to a variety of conferences, journals, or volumes that facilitated the development of the ideas in the book. Invitations from John Conley, Susan Haack, Sharon Lloyd, Michael Moore, Lee Tilson, David Shier, David Michaels, Celeste Monforton, Tom McGarity, Raphael Metzger, Wendy Wagner, and Rena Steinzor were particularly important. They provided quite helpful comments on drafts of earlier papers or on the book itself over the years. I also learned from Margaret Berger (now deceased), Michael Green, David Caudill, Peter Graham, Paul Hoffman (now deceased), Joe Sanders, Katherine Squibb, Vern Walker, Lauren Zeise, and numerous others. I presented earlier versions of some book chapters of the book to the Southern California Law and Philosophy Discussion Group. Comments by Gregory Keating, Larry Solum, Sharon Lloyd, Steve Munzer, Marshall Cohen, Aaron James, Cynthia Stark, and Chris Naticchia led to improvements in early drafts.

I have had the good fortune to deepen my understanding of science, scientific reasoning, and aspects of the law as a result of several kinds of experiences. Early research on risk assessment as a Congressional Fellow, serving most of the time at Congress's Office of Technology Assessment, began this education. Appointments to California's Proposition 65 Science Panel (1989–1992), to California's Electric and Magnetic Fields Science Advisory Panel (1999–2002), to California's Science Advisory Panel on Nanotechnology (2008–2010), and to the Science Guidance Panel of California's Biomonitoring Program (2012–present) has given me the opportunities to see up close numerous examples of scientific studies, scientific reasoning, interpretations of evidence, and even legitimate disagreements between well-respected scientists. I was a participant on these panels but also an observer of them. I gained much from both roles.

As a Fellow of the Collegium Ramazzini I have kept in touch with leading researchers and developments in cancer research and the developmental origins

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of disuse. Contact with faculty of the University of California scientific community through various meetings of the University of California's Toxic Substances Research and Teaching Program was invaluable and furthered my science education. Jerry Last, longtime Director of the Toxic Substances Research and Teaching Program (now discontinued), should be mentioned for partially enticing me down an unusual path, trenchant comments along the way, and a good deal of financial and other support over the years. Raymond Neutra, California Environmental Protection Agency pointed me toward important methodological research that was ultimately quite valuable. I owe special thanks to David Eastmond, Chair of the Environmental Toxicology Program, a coauthor and collaborator. I could always call on him to provide examples or references, to make suggestions for extending the ideas, to read something I had written, and to ensure that I understood scientific points and had expressed them correctly. An NSF grant with Dave together with grants from the University of California's Toxic Substances Research and Teaching Program greatly facilitated background research as well as work on the first edition of the book. The writings of and many conversations with my colleague Larry Wright, a career-long student of inferences to the best explanation, have deepened my understanding of the forms of argument that are central to science.

Contacts with practicing lawyers and scientific witnesses have provided more ground-level views of the law and some of the hurdles faced by lawyers and experts in presenting science in toxic tort cases. Many, many conversations with Joe Cecil over the years have challenged and clarified my thinking on these issues. John Berger of Cambridge University Press has been an enormously supportive and imaginative editor for this project over many years. Although I have learned from many in working on this book, none of them is responsible for any errors or shortcomings in the final product. The love and support of my family – Crystal, Chris, and Taylor – have made the task much easier (although their patience with discussions of toxicants, law, or science may be approaching a limit). A second time my family has been patient and supportive while I have reworked this book; there will soon be travel to come.