

THE RULE OF SCIENCE AND THE RULE OF LAW

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INTRODUCTION

In an attempt to be inclusive in their treatment of scientific evidence, courts have stumbled into a rule of law crisis. Rule of law principles work best when courts apply legal rules in a robust and consistent manner. Given a known set of facts, there should be a predictable set of outcomes in a given set of cases. The rule of law does not require perfectly replicated outcomes each time; after all, cases often have variations that will create some deviations. But when the rule of law is operating properly, the parties and society at large should be able to tell roughly where a case will come out.

Today, however, there are tort outcomes that are inconsistent with the mainstream scientific consensus. Further, there is wide variability in the outcomes of substantially similar cases. The “liberal thrust” by some courts to permit expert testimony has resulted in chaos.

“Too often, courts do not fully execute or enforce their ‘gatekeeping’ obligation.”¹ Instead, some courts are “allowing juries a role in deciding

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1. Letter from Bradley D. Dantic, Vice-President & Gen. Counsel, ALPS Prop. & Cas. Ins. Co. et al., to Rebecca A. Womeldorf, Sec’y, Comm. on Rules of Prac. and Proc. (Mar. 2, 2020), [hereinafter Letter from Bradley D. Dantic to Rebecca A. Womeldorf], https://www.uscourts.gov/sites/default/files/20-ev-b_suggestion_from_50_companies_-_rule_702_0.pdf (letter from fifty general counsel and senior corporate counsel in support of “Amending Federal Rule of Evidence 702 to Clarify Courts’ ‘Gatekeeping’ Obligation”). In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the Court “charged trial judges with the responsibility of acting as

whether an expert's opinions have the requisite scientific support without first ensuring that the testimony is the product of reliable principles and methods and is reliably applied."² These courts are deferring questions about the reliability of scientific evidence to the jury on the theory that scientific disputes are about the *weight* of the evidence rather than the *reliability* of the underlying principles.³

When judges allow questionable scientific evidence to be admitted at trial, the testimony may cloud, rather than clarify, the issues jurors are asked to decide.⁴ The jury may be influenced and reach an unscientific conclusion. As commentators explain:

When juries buy into the *post hoc* fallacy [that if one thing follows another, the first thing must have caused the second], it can result in serious adverse consequences for society. Product liability law is replete with unfortunate examples of courts failing to adequately screen expert testimony presented to layperson jurors, allowing the *post hoc* fallacy to lead jurors down an improper path that jeopardizes the health and welfare of others.⁵

This Article uses three recent, high profile litigations to illustrate the weakening of the rule of science in mass torts: low dose asbestos exposure litigation in California state court, Roundup (glyphosate-based weed killer) cancer trials that have occurred in Northern California, and litigation blaming

gatekeepers to exclude unreliable expert testimony," and in *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), "clarified that this gatekeeper function applies to all expert testimony, not just testimony based in science." FED. R. EVID. 702 advisory committee's note to 2000 amendments.

2. Letter from Bradley D. Dantic to Rebecca A. Womeldorf, *supra* note 1; see Victor E. Schwartz & Cary Silverman, *The Draining of Daubert and the Recidivism of Junk Science in Federal and State Courts*, 35 HOFSTRA L. REV. 217, 218-19 (2006) ("[S]ome courts have misinterpreted their 'flexibility' in applying the *Daubert* factors to the point of abdication of their gatekeeper role.").

3. See Hon. Thomas D. Schroeder, *Toward a More Apparent Approach to Considering the Admission of Expert Testimony*, 95 NOTRE DAME L. REV. 2039, 2043 (2020) ("[S]ome courts appear to be abdicating their charge under the Federal Rules of Evidence and *Daubert* and its progeny to make the hard call on admissibility. The end result in such cases is to relegate to the jury the very decisions Rule 702 contemplates to be beyond jury consideration."); David L. Faigman et al., *Gatekeeping Science: Using the Structure of Scientific Research to Distinguish Between Admissibility and Weight in Expert Testimony*, 110 NW. U. L. REV. 859, 862 (2016) (noting persistent confusion between admissibility and weight in federal courts); David E. Bernstein, *The Misbegotten Judicial Resistance to the Daubert Revolution*, 89 NOTRE DAME L. REV. 27, 28 (2013) (noting that changes to the "traditional laissez-faire law of expert testimony provoked resistance from some federal judges who favored more liberal rules of admissibility.").

4. See Hon. Paul S. Grewal, *Foreword to EVAN M. TAGER ET AL., ADMISSIBILITY OF EXPERT TESTIMONY: MANAGEABLE GUIDANCE FOR JUDICIAL GATEKEEPING*, at viii (2020), <https://www.wlf.org/wp-content/uploads/2020/01/WLF-Monograph-Tager-et-al2.pdf>.

5. Victor E. Schwartz & Christopher E. Appel, *Roundup Cases May Be a New Example of an Old Problem: The Post Hoc Fallacy*, 34 LEGAL BACKGROUNDER, Aug. 9, 2019, <https://www.wlf.org/2019/08/09/publishing/roundup-cases-may-be-a-new-example-of-an-old-problem-the-post-hoc-fallacy/>.

ovarian cancer on talcum powder. The Article then discusses the negative impacts of allowing unpersuasive science to prevail in court and looks at possible methods of restoring (and reinforcing) some needed uniformity in the standards that govern the admissibility of scientific evidence in tort cases. The Article concludes that science in courtrooms should track mainstream science and not change in outcome-determinative ways based on location. When the rule of science is lost in the courts, so is the rule of law. This is especially problematic in an era where “nuclear verdicts”⁶ are becoming common and “social inflation”⁷ is on the rise.⁸

I. ASBESTOS—EVERY EXPOSURE THEORY

Asbestos personal injury litigation—now a half-century old⁹—is the “longest running mass tort” in U.S. history.¹⁰ Originally and for many years, the primary defendants in asbestos cases were companies that mined asbestos or manufactured friable, amphibole-containing thermal insulation.¹¹ Hundreds of thousands of claims were filed against the major asbestos producers, such as Johns-Manville Corporation.¹² By the early 2000s, mass filings pressured “most of the original lead defendants in asbestos litigation

6. See, e.g., Max Mitchell, *With New Trial Tactics Fueling ‘Nuclear’ Verdicts, Can Defense Catch Up?*, LEGAL INTELLIGENCER (Oct. 22, 2019), <https://www.law.com/thelegalintelligencer/2019/10/22/with-new-trial-tactics-fueling-nuclear-verdicts-can-defense-catch-up/?sreturn=20200214110236>.

7. See, e.g., Telis Demos, *The Specter of Social Inflation Haunts Insurers*, WALL ST. J. (Dec. 27, 2019), <https://www.wsj.com/articles/the-specter-of-social-inflation-haunts-insurers-11577442780>.

8. See Bill Anderson, *Is Daubert Broken?*, IADC PROD. LIAB. COMM. NEWSL., Dec. 2019, at 4, https://www.iadclaw.org/assets/1/19/Product_Liability_December_2019.pdf?3625 (“Plaintiffs have broken through any sort of reasonable range of verdicts recently, with the awards in the stratosphere. Under no rational system can these verdicts be considered ‘absorbable’ or acceptable error. These outcomes are devastating and a series of them could potentially destroy safe and useful products and at least some of the companies that make them.”).

9. See, e.g., *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076, 1083–85 (5th Cir. 1973) (holding that asbestos product manufacturers could be held strictly liable for failure to warn of asbestos exposure risks).

10. Helen E. Freedman, *Selected Ethical Issues in Asbestos Litigation*, 37 SW. U. L. REV. 511, 511 (2008).

11. See JAMES S. KAKALIK ET AL., COSTS OF ASBESTOS LITIGATION 3 (1983).

12. See STEPHEN J. CARROLL ET AL., ASBESTOS LITIGATION xxiii–xxiv (2005) (“Approximately 730,000 people had filed an asbestos claim through 2002.”); James Stengel, *The Asbestos End-Game*, 62 N.Y.U. ANN. SURV. AM. L. 223, 238 (2006) (“As leading plaintiffs’ counsel Ron Motley and Joe Rice observed some time ago, the first seventeen asbestos defendants to go into bankruptcy represented ‘one-half to three-quarters of the original liability share.’”).

and scores of other companies” into bankruptcy, including virtually all manufacturers of asbestos-containing thermal insulation.¹³

After the largest and historically most culpable defendants exited the tort system in bankruptcy, plaintiffs’ attorneys shifted their focus “towards peripheral and new defendants.”¹⁴ The litigation became an “endless search for a solvent bystander.”¹⁵ “Low dose” defendants associated with encapsulated products (e.g., gaskets, floor tiles, and automotive friction products) and residential construction products (e.g., joint compound) containing chrysotile asbestos fibers became frequent targets in this new environment.¹⁶

The path for asbestos plaintiffs’ lawyers to sue such “low dose” defendants is the “any exposure” theory of causation.¹⁷ The theory is a litigation construct developed by plaintiffs’ experts to expand the asbestos

13. See CARROLL ET AL., *supra* note 12, at 67; see also Mark D. Plevin et al., *Where Are They Now, Part Six: An Update on Developments in Asbestos-Related Bankruptcy Cases*, 11 MEALEY’S ASBESTOS BANKR. REP. 1, 17-18 (Feb. 2012) (asbestos-related bankruptcies from 2000-2002 equaled the previous two decades combined).

14. Marc C. Scarcella et al., *The Philadelphia Story: Asbestos Litigation, Bankruptcy Trusts and Changes in Exposure Allegations from 1991-2010*, 27 MEALEY’S LITIG. REP.: ASBESTOS 1, 1 (Nov. 7, 2012); see also Patrick M. Hanlon & Anne Smetak, *Asbestos Changes*, 62 N.Y.U. ANN. SURV. AM. L. 525, 556 (2007) (the “surge of bankruptcies” triggered “a search for new recruits to fill the gap in the ranks of defendants”); CARROLL ET AL., *supra* note 12, at xxiii (plaintiffs began to “press peripheral non-bankrupt defendants to shoulder a larger share of the value of asbestos claims and to widen their search for other corporations that might be held liable for the costs of asbestos exposure and disease.”).

15. ‘*Medical Monitoring and Asbestos Litigation*’ A Discussion with Richard Scruggs and Victor Schwartz, 17 MEALEY’S LITIG. REP.: ASBESTOS 1, 19 (2002) (quoting Mr. Scruggs); see also Am. Acad. of Actuaries’ Mass Torts Subcommittee, *Overview of Asbestos Claims Issues and Trends* 3 (Aug. 2007), https://www.actuary.org/sites/default/files/files/asbestos_aug07.4.pdf/asbestos_aug07.4.pdf (“Parties formerly viewed as peripheral defendants are now bearing the majority of the costs of awards relating to decades of asbestos use.”).

16. See Mark A. Behrens, *What’s New in Asbestos Litigation?*, 28 REV. LITIG. 501, 528 (2009) (“Now, an increasing number of plaintiffs are bringing claims for de minimis or remote exposures, such as ‘shade tree’ brake work on the family car or one remodeling job using asbestos-containing joint compound.”); Richard A. Nagareda, *Embedded Aggregation in Civil Litigation*, 95 CORNELL L. REV. 1105, 1155 n.223 (2010) (noting the expansion of asbestos personal injury litigation to “more remote defendants outside the traditional asbestos industry”).

17. See Mark A. Behrens & William L. Anderson, *The “Any Exposure” Theory: An Unsound Basis for Asbestos Causation and Expert Testimony*, 37 SW. U. L. REV. 479 (2008); William L. Anderson et al., *The “Any Exposure” Theory Round II – Court Review of Minimal Exposure Expert Testimony in Asbestos and Toxic Tort Litigation Since 2008*, 22 KAN. J.L. & PUB. POL’Y 1 (2012); William L. Anderson & Kieran Tuckley, *The Any Exposure Theory Round III: An Update on the State of the Case Law 2012-2016*, 83 DEF. COUNS. J. 264 (2016); William L. Anderson & Kieran Tuckley, *How Much Is Enough? A Judicial Roadmap to Low Dose Causation Testimony in Asbestos and Tort Litigation*, 42 AM. J. TRIAL ADVOC. 39 (2018).

litigation to attenuated defendants.¹⁸ The theory posits that “any exposure to asbestos fibers whatsoever, regardless of the amount of fibers or length of exposure constitutes an underlying cause of injury.”¹⁹ The theory ignores the important concept of dose in causation.²⁰ Just as in other toxic torts, the “dose makes the poison”²¹ with regard to exposure to asbestos.

*Lohrmann v. Pittsburgh Corning Corp.*²² reflects an early rejection of the any exposure theory by a court. In *Lohrmann*, the Fourth Circuit Court of Appeals held that “[w]hether a plaintiff could successfully get to the jury or defeat a motion for summary judgment . . . would depend upon the frequency of the use of the product and the regularity or extent of the plaintiff’s employment in proximity thereto.”²³ Many jurisdictions apply a *Lohrmann*-like test.²⁴

A more recent trend is for courts to apply a “more rigorous analysis of the concept of dose and its role in substantial factor causation in asbestos

18. See Jim Sinunu, *The Rise of Gatekeepers and the ‘Single Fiber’ Theory*, 35 WESTLAW J. ASBESTOS, Mar. 15, 2013, at 1, 3 (plaintiffs’ exposures to asbestos have “continued to drop, to the point where some companies are defending against doses admittedly equal to or less than the dose the average citizen would receive from the atmosphere.”).

19. *Krik v. Exxon Mobil Corp.*, 870 F.3d 669, 672 (7th Cir. 2017). A variation of the “every exposure” theory states that “every exposure to asbestos above a threshold level is necessarily a substantial factor in the contraction of asbestos-related diseases.” *McIndoe v. Huntington Ingalls Inc.*, 817 F.3d 1170, 1177 (9th Cir. 2016). A further outgrowth of the “every exposure” theory is the “cumulative exposure” theory. “Under this theory, every minute of exposure adds to the cumulative exposure and thus becomes a substantial contributing factor.” *Krik*, 870 F.3d at 675.

20. “[A]sbestos-containing products are not uniformly dangerous.” *Becker v. Baron Bros.*, 649 A.2d 613, 620 (N.J. 1994); see also *Gideon v. Johns-Manville Sales Corp.*, 761 F.2d 1129, 1145 (5th Cir. 1985) (“[A]sbestos-containing products cannot be lumped together in determining their dangerousness.”); *Celotex Corp. v. Copeland*, 471 So. 2d 533, 538 (Fla. 1985) (“Asbestos products . . . have widely divergent toxicities, with some asbestos products presenting a much greater risk of harm than others.”); EASTERN RESEARCH GROUP, INC., REPORT ON THE PEER CONSULTATION WORKSHOP TO DISCUSS A PROPOSED PROTOCOL TO ASSESS ASBESTOS-RELATED RISK viii (May 30, 2003), https://www.epa.gov/sites/production/files/2015-11/documents/2008_appendix_d_2003_peer_cons.pdf (“The panelists unanimously agreed that the available epidemiology studies provide compelling evidence that the carcinogenic potency of amphibole fibers is two orders of magnitude greater than that for chrysotile fibers.”).

21. See Sinunu, *supra* note 18, at 1.

22. 782 F.2d 1156 (4th Cir. 1986).

23. *Id.* at 1162.

24. See Victor E. Schwartz & Mark A. Behrens, *Asbestos Litigation: The “Endless Search for a Solvent Bystander”*, 23 WIDENER L.J. 59, 72 n.79 (2013).

cases.”²⁵ Numerous federal and state courts have excluded expert testimony or evidence grounded in the “any exposure” theory on this basis.²⁶

For instance, in *Krik v. Exxon Mobil Corp.*²⁷ the Seventh Circuit Court of Appeals upheld a trial court’s exclusion of “any exposure” testimony, concluding that the theory ignores “fundamental principles of toxicology that illnesses like cancer are dose dependent.”²⁸ Ignoring the dose requirement is, basically, ignoring the science.²⁹

The Sixth Circuit Court of Appeals rejected the any exposure theory in *Moeller v. Garlock Sealing Technologies, LLC*.³⁰ The court held:

25. *Id.* at 73; see also David E. Bernstein, *Getting to Causation in Toxic Tort Cases*, 74 BROOK. L. REV. 51, 59 (2008) (“The recent, increasingly strict exposure cases . . . reflect a welcome realization by state courts that holding defendants liable for causing asbestos-related disease when their products were responsible for only de minimis exposure to asbestos, and other parties were responsible for far greater exposure, is not just.”); Joseph Sanders, *The “Every Exposure” Cases and the Beginning of the Asbestos Endgame*, 88 TUL. L. REV. 1153, 1184 (2014) (the “‘any exposure’ cases indicate a general turn away from a proplaintiff jurisprudence in the asbestos cases”); Megan A. Ceder, Comment, *A Dose of Reality: The Struggle with Causation in Toxic Tort Litigation*, 51 HOUS. L. REV. 1147, 1170 (2014) (“[C]ourts are increasingly rejecting any-exposure testimony and should continue to do so.”).

26. See *Krik v. Exxon Mobil Corp.*, 870 F.3d 669, 677 (7th Cir. 2017) (noting “more than thirty other federal courts and state courts have held that this cumulative/any exposure’ theory is not reliable”); *Doolin v. Ford Motor Co.*, No. 3:16-cv-778-J-34PDB, 2018 WL 4599712, at *36 (M.D. Fla. Sept. 25, 2018) (“[T]he ‘each and every’ or ‘any’ exposure theory, and in recent variations the ‘cumulative’ exposure theory, . . . has been extensively discussed and criticized as scientifically unsound by state and federal courts throughout the country.”); *Rockman v. Union Carbide Corp.*, 266 F. Supp. 3d 839, 843 (D. Md. 2017) (“There is simply insufficient data to support the[] theory that any exposure to asbestos, no matter how brief, and regardless of the type of asbestos, should be considered a ‘substantial factor’ . . .”); *Vedros v. Northrop Grumman Shipbuilding, Inc.*, 119 F. Supp. 3d 556, 562-63 (E.D. La. 2015) (“Numerous courts have excluded expert testimony or evidence grounded in this theory, reasoning that it lacks sufficient support in facts and data” and “cannot be tested, has not been published in peer-reviewed works, and has no known error rate.”); *Yates v. Ford Motor Co.*, 113 F. Supp. 3d 841, 846 (E.D.N.C. 2015) (“Numerous courts have excluded expert testimony or evidence grounded in this theory, reasoning that it lacks sufficient support in facts and data.”).

27. 870 F.3d 669 (7th Cir. 2017).

28. *Id.* at 675; see also Knight S. Anderson et al., *That Which We Call “Any Exposure” By Any Other Name Would Smell as Rotten*, 60 No. 11 DRI FOR DEF. 48, 48 (2018).

29. See, e.g., *McMunn v. Babcock & Wilcox Power Generation Grp., Inc.*, 869 F.3d 246, 271 (3d Cir. 2017) (excessive radiation from uranium effluent) (plaintiff expert’s “testimony is insufficient to create a genuine issue of fact regarding causation because it is nothing more than a radiation version of the impermissible ‘any breath’ theory”); *McClain v. Metabolife Int’l, Inc.*, 401 F.3d 1233, 1241 (11th Cir. 2005) (ephedrine) (in toxic torts, “scientific knowledge of the harmful level of exposure to a chemical plus knowledge that plaintiff was exposed to such quantities are minimal facts necessary to sustain the plaintiff’s burden”) (quoting *Allen v. Pennsylvania Eng’g Corp.*, 102 F.3d 194, 199 (5th Cir.1996)).

30. 660 F.3d 950 (6th Cir. 2011); see also *Stallings v. Georgia-Pac. Corp.*, 675 F. App’x 548 (6th Cir. 2017); *Pluck v. BP Oil Pipeline Co.*, 640 F.3d 671 (6th Cir. 2011) (benzene); *Martin v. Cincinnati Gas & Elec. Co.*, 561 F.3d 439 (6th Cir. 2009); *Lindstrom v. A-C Prod. Liab. Trust*, 424

While [decedent's] exposure to [defendant's] gaskets may have contributed to his mesothelioma, the record simply does not support an inference that it was a *substantial* cause of his mesothelioma. Given that the Plaintiff failed to quantify [decedent's] exposure to asbestos from [defendant's] gaskets and that the Plaintiff concedes that [decedent] sustained massive exposure to asbestos from [other] sources, there is simply insufficient evidence to infer that [defendant's] gaskets probably, as opposed to possibly, were a substantial cause of [decedent's] mesothelioma.³¹

According to the court, “saying that exposure to [defendant's] gaskets was a substantial cause of [decedent's] mesothelioma would be akin to saying that one who pours a bucket of water into the ocean has substantially contributed to the ocean's volume.”³²

The Ninth Circuit rejected the “any exposure” theory in *McIndoe v. Huntington Ingalls Inc.*³³ The court said that allowing causation in asbestos cases to be established from fleeting encounters is “precisely the sort of unbounded liability that the substantial factor test was developed to limit.”³⁴

The Texas Supreme Court rejected the any exposure causation approach in *Borg-Warner Corp. v. Flores*.³⁵ In *Flores*, the court said that a plaintiff must present “[d]efendant-specific evidence relating to the approximate dose to which the plaintiff was exposed, coupled with evidence that the dose was a substantial factor in causing the asbestos-related disease.”³⁶ The Ohio Supreme Court in *Schwartz v. Honeywell International, Inc.*³⁷ held that a “theory of causation based only upon cumulative exposure to various asbestos-containing products is insufficient to demonstrate that a particular defendant's product was a ‘substantial factor.’”³⁸ Other state appellate courts have reached similar decisions.³⁹

F.3d 488 (6th Cir. 2005); *Nelson v. Tennessee Gas Pipeline Co.*, 243 F.3d 244 (6th Cir. 2001) (PCB).

31. *Moeller*, 660 F.3d at 955.

32. *Id.*; *see also Martin*, 561 F.3d at 443 (noting the “any exposure” approach “would make every incidental exposure to asbestos a substantial factor.”).

33. 817 F.3d 1170, 1178 (9th Cir. 2016).

34. *Id.* at 1177; *see also Estate of Barabin v. AstenJohnson, Inc.*, 740 F.3d 457 (9th Cir. 2014) (remanding \$11 million trial verdict because trial court failed to analyze expert theories, including every exposure theory, sufficiently under *Daubert*).

35. 232 S.W.3d 765 (Tex. 2007).

36. *Id.* at 773; *see also Bostic v. Georgia-Pacific Corp.*, 439 S.W.3d 332 (Tex. 2014).

37. 102 N.E.3d 477 (Ohio 2018).

38. *Id.* at 480.

39. *See Crane Co. v. Delisle*, 206 So. 3d 94 (Fla. Dist. Ct. App. 2016); *Scapa Dryer Fabrics, Inc. v. Knight*, 788 S.E.2d 421 (Ga. 2016); *Brooks v. Stone Architecture, P.A.*, 934 So. 2d 350 (Miss. Ct. App. 2006); *In re New York City Asbestos Litig.*, 148 A.D.3d 233 (N.Y. App. Div. 2017), *aff'd*, 116 N.E.3d 75 (N.Y. 2018); *Gregg v. V-J Auto Parts Co.*, 943 A.2d 216 (Pa. 2007); *Betz v. Pneumo Abex LLC*, 44 A.3d 27 (Pa. 2012); *Howard ex rel. Estate of Ravert v. A.W.*

A few courts have ruled contrary to the overriding trend in the case law.⁴⁰ California courts in particular have issued extreme rulings with regard to permitting any exposure testimony and allowing insignificant exposures to be deemed causative⁴¹—contrary to the California Supreme Court’s landmark decision in *Rutherford v. Owens-Illinois, Inc.*⁴²

In *Rutherford*, the California Supreme Court followed “traditional tort principles”⁴³ and established the “substantial factor” test for determining causation in asbestos personal injury cases.⁴⁴ Over the past two decades, however, “the ‘substantial factor’ test somehow became less ‘substantial’” in asbestos cases.⁴⁵ Now, a California plaintiff can establish “at least a triable issue on substantial factor causation, no matter what the evidence showed about the significance—or lack thereof—of the dose of asbestos received from that exposure.”⁴⁶

For example, in *Davis v. Honeywell International, Inc.*,⁴⁷ a brake worker exposure case, defendant Honeywell moved to exclude plaintiff’s “any exposure” theory expert on the ground that the testimony should be excluded under *Sargon v. University of Southern California*.⁴⁸ In *Sargon*, a non-asbestos case, the California Supreme Court said that expert testimony must not be speculative and that “trial courts have a substantial ‘gatekeeping’ responsibility.”⁴⁹ The *Davis* court, however, affirmed the admission of the plaintiff expert’s testimony, bluntly stating that the “aim . . . is not to admit only persuasive expert opinion.”⁵⁰ The court added, “we simply disagree with

Chesterton Co., 78 A.3d 605 (Pa. 2013); *Ford Motor Co. v. Boomer*, 736 S.E.2d 724 (Va. 2013); see also *Parker v. Mobil Oil Corp.*, 857 N.E.2d 1114 (N.Y. 2006) (benzene); *Blanchard v. Goodyear Tire & Rubber Co.*, 30 A.3d 1271 (Vt. 2011) (benzene).

40. See *Dixon v. Ford Motor Co.*, 70 A.3d 328 (Md. 2013); *Chapin v. A & L Parts, Inc.*, 732 N.W.2d 578 (Mich. Ct. App. 2007) (expert’s testimony was admissible); *Buttitta v. Allied Signal, Inc.*, No. A-5263-07T1, 2010 WL 1427273 (N.J. Super. Ct. App. Div. Apr. 5, 2010).

41. Jason Litt et al., *Returning to Rutherford: A Call to California Courts to Rejoin the Legal Mainstream and Require Causation Be Proved in Asbestos Cases Under Traditional Torts Principles*, 45 SW. L. REV. 989, 990 (2016).

42. 941 P.2d 1203, 1120-21 (Cal. 1997).

43. *Id.* at 1206.

44. *Id.* at 1219 (holding that plaintiffs may prove causation by “demonstrating that the plaintiff’s exposure to defendant’s asbestos-containing product in reasonable medical probability was a substantial factor in contributing to the aggregate dose of asbestos the plaintiff or decedent inhaled or ingested, and hence to the risk of developing asbestos-related cancer”).

45. Steven D. Wasserman et al., *Asbestos Litigation in California: Can It Change for the Better?*, 34 PEPP. L. REV. 883, 895 (2007).

46. Litt, *supra* note 41.

47. 199 Cal. Rptr. 3d 583, 586 (Cal. Ct. App. 2016).

48. 288 P.3d 1237 (Cal. 2012).

49. *Id.* at 1250.

50. *Davis*, 199 Cal. Rptr. 3d at 595.

courts in other jurisdictions that conclude the ‘every exposure’ theory cannot be reconciled with the fact that mesothelioma and other asbestos-related diseases are dose dependent.”⁵¹

Most recently, a California Court of Appeal in *Friedman v. American Biltrite, Inc.*⁵² overturned a directed verdict for a defendant where plaintiff’s expert testified that plaintiff’s proximity as a bystander to vinyl floor tile installation in a single room of his house during a one- to maybe three-day period over fifty years ago contributed to plaintiff’s risk of mesothelioma. The trial court remarked, “Really, can it get any thinner than that? I don’t think so.”⁵³ The trial court added, “This case must be at the very lowest level of causation that is likely to be heard by this or any other court.”⁵⁴ The appellate court, however, said that a directed verdict for the defendant was unwarranted. Pursuant to *Davis*, the appellate court said, “It is for the jury to resolve the conflict between the every exposure theory and any competing expert opinions.”⁵⁵ Again, the court was more invested in protecting a theory of liability than in ensuring that persuasive science carried the day.

II. ROUNDUP LITIGATION

In 2015, the International Agency for Research on Cancer (IARC), the cancer research arm of the United Nations’ World Health Organization, published a finding that glyphosate—the active ingredient in Roundup, a commonly used herbicide originally produced by Monsanto—is “probably carcinogenic to humans.”⁵⁶ The IARC working group’s report paid particular attention to Non-Hodgkin’s Lymphoma (“NHL”), a cancer that starts in the lymphatic system.⁵⁷

IARC’s finding is a departure from the long-running scientific consensus that glyphosate does not pose cancer risks at human level doses.⁵⁸

51. *Id.* at 597 (emphasis added).

52. No. B291411, 2019 WL 2520688 (Cal. Ct. App. June 19, 2019).

53. *Id.* at *6.

54. *Id.* at *7.

55. *Id.* at *13 (quoting *Davis*, 199 Cal. Rptr. 3d at 586).

56. See INT’L AGENCY FOR RESEARCH ON CANCER, WORLD HEALTH ORG., IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISKS TO HUMANS Vol. 112, SOME ORGANOPHOSPHATE INSECTICIDES AND HERBICIDES 398 (2015), <https://publications.iarc.fr/549>; see also INT’L AGENCY FOR RESEARCH ON CANCER, WORLD HEALTH ORG., Q&A ON GLYPHOSATE (2016), https://www.iarc.fr/wp-content/uploads/2018/11/QA_Glyphosate.pdf.

57. See Kathryn Z. Guyton et al., *Carcinogenicity of Tetrachlorvinphos, Parathion, Malathion, Diazinon, and Glyphosate*, 16 LANCET 490 (2015), [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(15\)70134-8/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(15)70134-8/fulltext).

58. See Nat’l Ass’n of Wheat Growers v. Becerra, No. 2:17-cv-2401 WBS EFB, 2020 WL 3412732, at *2 (E.D. Cal. June 22, 2020) (“IARC classified glyphosate as ‘probably carcinogenic’

For example, the U.S. Environmental Protection Agency “does not currently consider glyphosate likely to cause cancer.”⁵⁹

What prompted the IARC finding? Unlike regulatory agencies, which concern themselves with actual threats from known health risks, the IARC seeks to identify *hazards*, not *risks*:

[IARC’s] decision that a substance is “probably carcinogenic to humans” is a hazard assessment—merely the first step in determining whether the substance currently presents a meaningful risk to human health. IARC leaves the second step—risk assessment—to other public health entities. Moreover, even with its hazard assessment, IARC makes clear that although it uses the word “probably,” it does not intend for that word to have any quantitative significance.⁶⁰

Nevertheless, a wave of lawsuits followed IARC’s finding, particularly in California and Missouri (home to Monsanto, now part of Bayer’s crop science division), and the federal courts. The federal court cases were consolidated into a multi-district litigation proceeding (MDL) in the Northern District of California managed by U.S. District Court Judge Vince Chhabria.⁶¹

The Roundup litigation shows how science in the courts can be divorced from the scientific consensus when a judge’s gatekeeping role is perceived to be trumped by a “‘liberal thrust’ favoring admission”⁶² of expert evidence. For example, Ninth Circuit case law “emphasizes that a trial judge should not exclude an expert opinion merely because he thinks it’s shaky, or because he thinks the jury will have cause to question the expert’s credibility.”⁶³ According to Judge Chhabria, “This emphasis has resulted in slightly more

to humans based on ‘sufficient evidence’ that it caused cancer in experimental animals and ‘limited evidence’ that it could cause cancer in humans,” but “several other organizations, including the EPA, other agencies within the World Health Organization, and government regulators from multiple countries, have concluded that there is insufficient or no evidence that glyphosate causes cancer.”). IARC’s “reputation has also come into question in the past based on determinations that red meat, beer, cell phones, and hot beverages such as coffee and tea are probably carcinogenic.” Schwartz & Appel, *supra* note 5, at 4.

59. *In re Roundup Prods. Liab. Litig.*, 390 F. Supp. 3d 1102, 1110 (N.D. Cal. 2018) (citing U.S. ENVTL. PROT. AGENCY OFFICE OF PESTICIDE PROGRAMS, REVISED GLYPHOSATE ISSUE PAPER: EVALUATION OF CARCINOGENIC POTENTIAL 12-13, 143-44 (2017), https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=534487).

60. *Id.* at 1108.

61. Pretrial Order No. 1, *In re Roundup Prods. Liab. Litig.*, No. 16-md-02741-VC, 2016 WL 9276118 (N.D. Cal. Oct. 6, 2016).

62. *In re Roundup Prods. Liab. Litig.*, 390 F. Supp. 3d 1102, 1112 (N.D. Cal. 2018) (quoting *Messick v. Novartis Pharm. Corp.*, 747 F.3d 1193, 1196 (9th Cir. 2014)).

63. *Id.* at 1109.

room for deference to experts in close cases than might be appropriate in some other Circuits.”⁶⁴

Judge Chhabria called the Roundup plaintiffs’ general causation evidence “rather weak”⁶⁵ and “shaky,”⁶⁶ concluding that “[t]he evidence, viewed in its totality, seems too equivocal to support any firm conclusion that glyphosate causes NHL.”⁶⁷ Yet, he denied summary judgment to Monsanto, stressing several times that it was a “close question.”⁶⁸ Judge Chhabria said that the specific causation evidence of three bellwether plaintiffs was “again a close question, but the plaintiffs have barely inched over the line.”⁶⁹ In both instances, Judge Chhabria was highlighting the fact that the thrust to admit conflicted with his gatekeeping responsibility.

As of the writing of this Article, there had been three trials in cases alleging that plaintiffs developed NHL from Roundup exposure. All three trials took place in Northern California (one in San Francisco federal court and two in Bay Area state courts).⁷⁰ Each of the trials resulted in plaintiff verdicts and received national media attention because of their enormity.⁷¹ Bayer subsequently resolved tens of thousands of Roundup-related suits.⁷²

In contrast to these litigation developments, EPA publicly reiterated in January 2020 that the agency had “thoroughly evaluated potential human health risk associated with exposure to glyphosate and determined that there

64. *Id.* at 1113; *see also In re Roundup Prods. Liab. Litig.*, 358 F. Supp. 3d 956, 959 (N.D. Cal. 2019) (stating that “district courts in the Ninth Circuit must be more tolerant of borderline expert opinions than in other circuits.”).

65. *In re Roundup Prods. Liab. Litig.*, 390 F. Supp. 3d at 1108.

66. *Id.* at 1151.

67. *Id.* at 1109.

68. *See id.* at 1151-52.

69. *In re Roundup Prods. Liab. Litig.*, 358 F. Supp. 3d at 957; *see also id.* at 960 (noting the court’s skepticism regarding the conclusions of the plaintiffs’ experts); *In re Roundup Prods. Liab. Litig.*, No. 16-md-02741-VC, at *1 (N.D. Cal. Jan. 11, 2021) (Pretrial Order No. 225) (calling the opinions of plaintiff’s causation experts “subject to significant doubt” but denying Monsanto’s motion to exclude their testimony).

70. *See* Editorial, *The Roundup Settlement*, WALL ST. J. (June 29, 2020), at A14, <https://www.wsj.com/articles/the-roundup-settlement-11593212426> [hereinafter *The Roundup Settlement*].

71. Juries awarded \$2.4 billion to plaintiffs in the first three Roundup cases to go to trial. *See* Sara Randazzo & Jacob Bunge, *Inside the Mass-Tort Machine That Powers Thousands of Roundup Lawsuits*, WALL ST. J. (Nov. 25, 2019), <https://www.wsj.com/articles/inside-the-mass-tort-machine-that-powers-thousands-of-roundup-lawsuits-11574700480>. The awards were reduced post-trial in all of the cases and one of the awards was further reduced on appeal as of this writing. *See Johnson v. Monsanto Co.*, 52 Cal. App. 5th 434 (2020); *In re Roundup Prods. Liab. Litig.* (*Hardeman v. Monsanto Co.*), 385 F. Supp. 3d 1042 (N.D. Cal. 2019); *Pilliod v. Monsanto Co.*, No. RG-17-862702, 2019 WL 3540107 (Cal. Super. Ct. Alameda Cty. July 26, 2019).

72. *See* Joel Rosenblatt, *Bayer Settles Thousands More Roundup Suits*, BLOOMBERG.COM (Sept. 15, 2020).

are no risks to human health from the current registered uses of glyphosate and that glyphosate is not likely to be carcinogenic to humans.”⁷³ The United States took the position in December 2019 that a cancer warning on glyphosate-based products would “constitute[] prohibited misbranding” because the change would “warn[] of a cancer risk that, according to EPA’s assessment, does not exist.”⁷⁴ In August 2019, EPA wrote:

EPA disagrees with IARC’s assessment of glyphosate. EPA scientists have performed an independent evaluation of available data since the IARC classification to reexamine the carcinogenic potential of glyphosate and concluded that glyphosate is “not likely to be carcinogenic to humans.” EPA considered a more extensive dataset than IARC, including studies submitted to support registration of glyphosate and studies identified by EPA in the open literature as part of a systematic review.⁷⁵

These are extraordinary positions for the United States to take, but they are not new. For decades spanning Republican and Democrat Administrations, the EPA “has repeatedly and explicitly concluded that glyphosate does not pose a cancer risk.”⁷⁶

EPA’s position is “consistent with other international expert panels and regulatory authorities, including the Canadian Pest Management Regulatory Agency, Australian Pesticide and Veterinary Medicines Authority, European Food Safety Authority, European Chemicals Agency, German Federal Institute for Occupational Safety and Health, New Zealand Environmental Protection Authority, and the Food Safety Commission of Japan.”⁷⁷ In addition, a 2018 Agricultural Health Study of over 50,000 licensed pesticide applicators found “no association between glyphosate [use] and NHL” or its

73. U.S. Env’tl. Prot. Agency, *Glyphosate Interim Registration Review Decision*, Case No. 0178, at 10 (Jan. 2020), <https://www.epa.gov/sites/production/files/2020-01/documents/glyphosate-interim-reg-review-decision-case-num-0178.pdf>.

74. *See* Brief of the United States as *Amicus Curiae* in Support of Monsanto at *9-10, *Monsanto Co. v. Hardeman*, No. 19-16636, 2019 WL 7494588 (9th Cir. Dec. 20, 2019).

75. Letter from Michael L. Goodis, P.E., Dir., Registration Div., Office of Pesticide Programs, EPA to Glyphosate Registrants (Aug. 7, 2019), https://www.epa.gov/sites/production/files/2019-08/documents/glyphosate_registrant_letter_-_8-7-19_-_signed.pdf.

76. Brief *Amicus Curiae* of Croplife America in Support of Defendant-Appellant Monsanto Co. at *15, *Hardeman v. Monsanto Co.*, Nos. 19-16636, 19-16708, 2019 WL 7403921 (9th Cir. Dec. 19, 2019).

77. Goodis, *supra* note 75; *see also* Brief of *Amici Curiae* States of Neb. et al., in Support of Defendant-Appellant/Cross-Appellee Monsanto Co. Seeking Reversal at *3, *Hardeman v. Monsanto Co.*, Nos. 19-16636, 19-16708, 2019 WL 7494576 (9th Cir. Dec. 20, 2019) [hereinafter *Neb. Amici Curiae*] (“The overwhelming consensus from research and regulatory bodies is that glyphosate does not cause cancer or non-Hodgkins lymphoma (‘NHL’) in humans.”).

subtypes.⁷⁸ The North American Pooled Project, funded by the National Institutes of Health, also showed “no evidence of a positive association between glyphosate, including higher levels of glyphosate exposure, and the risk of NHL.”⁷⁹

In June of 2020, a California federal district court permanently enjoined the state from requiring a “Proposition 65” cancer warning on glyphosate-based herbicides.⁸⁰ California’s “Prop 65” requires, among other things, “warning labels for products containing chemicals known to . . . California to cause cancer, as determined by certain outside entities.”⁸¹ The court held, “California may not skew the public debate by forcing companies to adopt the state’s determination that glyphosate is a carcinogen, relying solely on the IARC’s determination, when the great weight of evidence indicates that glyphosate is not known to cause cancer.”⁸²

The Roundup litigation illustrates how a disconnect between courtroom science and mainstream science can form when trial courts, perhaps fearing reversal, admit unpersuasive scientific evidence. These disconnects undermine confidence in the civil justice system and discourage investment.⁸³ The *Wall Street Journal* called the Roundup litigation “a shakedown for the history books”⁸⁴ and “a stickup.”⁸⁵ Bayer’s CEO told Fox Business, “I would say that the country’s in dire need of tort reform.”⁸⁶

78. *Neb. Amici Curiae*, *supra* note 77, at *8; see also Gabriella Andreotti et al., *Glyphosate Use and Cancer Incidence in the Agricultural Health Study*, 110 J. NAT’L CANCER INST. 509 (2018), <https://www.ncbi.nlm.nih.gov/pubmed/29136183>.

79. Appellant’s Opening Brief at 21-22, *Johnson v. Monsanto Co.*, Nos. A155940, A156706, 2019 WL 1871152 (Cal. Ct. App. Apr. 24, 2019).

80. See *Nat’l Ass’n of Wheat Growers*, 2020 WL 3412732, at *13.

81. *Id.* at *1.

82. *Id.* at *8.

83. See Richard Grenell, Editorial, *A Judge’s Monsanto Ruling Affects Both the Law and the Economy*, THE HILL (Sept. 18, 2020), <https://thehill.com/opinion/judiciary/517055-a-judges-monsanto-ruling-affects-both-the-law-and-the-economy> (“European and other foreign businesses have to be reassured that they will get fair, rules-based and data-based hearings in American courts, without interference by judicial or political activism At stake is more than just the fortunes of lawyers and consumers of Roundup: It is the integrity of the U.S. courts and the ability to keep our economy strong.”); see also Paul Driessen, *Collusion, Corruption, and Billion-Dollar Verdicts*, 25 J. OF AM. PHYSICIANS & SURGEONS 83 (2020) (discussing Roundup litigation and stating, “Mass tort ‘jackpot justice’ law firms continue to devise and implement better strategies, skills, technologies, alliances, financing, and ability to capitalize on previous victories—making them one of the biggest threats America’s corporations, technologies, legal system, and society have ever faced.”).

84. *The Roundup Settlement*, *supra* note 70.

85. Editorial, *The Roundup Stickup*, WALL ST. J. (Dec. 27, 2019), <https://www.wsj.com/articles/the-roundup-stickup-11577299381>.

86. Werner Baumann, *CEO of Bayer, Is Interviewed on Fox Business*, CQ-ROLLCALL POL. TRANSCRIPTIONS, 2020 WLNR 17711970 (June 25, 2020).

III. TALC LITIGATION

In January 2020, the *Journal of the American Medical Association* published the results of an original investigation in which it announced that, after examining four cohort populations involving more than 250,000 women, “there was not a statistically significant association between use of [talcum] powder in the genital area and ovarian cancer.”⁸⁷

By the time of the JAMA article, however, defendant Johnson & Johnson was facing thousands of lawsuits brought by plaintiffs alleging that talcum powder products used for feminine hygiene purposes had caused their ovarian cancer.

The origin point of the “talc litigation” was a trial in South Dakota federal court, *Berg v. Johnson & Johnson*.⁸⁸ In *Berg*, the plaintiff sued Johnson & Johnson, alleging that its talc products had caused her cancer, and that the products “did not include any warnings regarding the possible hazards of applying talc to a woman’s perineum.”⁸⁹

In preparing for a summary judgment motion, Johnson & Johnson challenged the testimony of the plaintiff’s experts, an epidemiologist who had conducted a prior study of ovarian cancer and talc (Dr. Cramer) and a toxicologist (Dr. Rosenthal).⁹⁰ In deciding whether to admit the expert testimony, the trial court cited Eighth Circuit precedent that interpreted Rule 702 as “clearly [a rule] of admissibility rather than exclusion,” and set a low bar: “An expert’s opinion should be excluded ‘only if it is so fundamentally unsupported that it can offer no assistance to the jury.’”⁹¹

Johnson & Johnson’s primary target for exclusion was Dr. Cramer, the epidemiologist. The company sought to exclude his testimony as unreliable for various reasons, including:

- He did not rule out alternative causes of ovarian cancer.⁹²
- His testimony conflicted with “existing scientific literature” that showed a much lower chance of contracting ovarian cancer after exposure to talc.⁹³

87. Katie M. O’Brien et al., *Association of Powder Use in the Genital Area with Risk of Ovarian Cancer*, 323 JAMA 49, 49-59 (2020).

88. 940 F. Supp. 2d 983 (D.S.D. 2013).

89. *Id.* at 987.

90. *Id.*

91. *Id.* at 988 (quoting *Sappington v. Skyjack, Inc.*, 512 F.3d 440, 448 (8th Cir. 2008)).

92. *Id.* at 991.

93. *Id.*

- The conflict appeared to result from the fact that Dr. Cramer had “‘cherry-picked’ data in order to form an opinion solely for purposes of litigation.”⁹⁴
- His conclusions conflicted with his non-litigation research, and conflicted with each other internally.⁹⁵
- He did not offer a reliable “model[] of biological plausibility.”⁹⁶ In other words, while he might have shown that there was *some* statistical relationship between exposure to talc and occurrence of ovarian cancer, he had not offered a plausible explanation of *how* that exposure could have caused the cancer. (This was also Johnson & Johnson’s grounds for challenging Dr. Rosenthal, the toxicologist).⁹⁷

The trial court nevertheless admitted the testimony of Drs. Cramer and Rosenthal.⁹⁸ Armed with their testimony, Ms. Berg survived a summary judgment motion, and proceeded to win at trial.⁹⁹

Post-*Berg*, plaintiffs across the country began filing talc lawsuits against Johnson & Johnson and other defendants. The suits, which allege nearly identical claims, have produced dramatically different results.¹⁰⁰ On one extreme, a twenty-two plaintiff case in the City of St. Louis produced a \$4.69 billion verdict, reduced to \$2.12 billion by the Missouri Court of Appeals after some plaintiffs’ claims were dismissed.¹⁰¹ There have been several multi-million dollar verdicts in various jurisdictions, including California.¹⁰² Johnson & Johnson has won other cases at trial.¹⁰³

In May 2020, Johnson & Johnson announced it was discontinuing North American sales of its talc-based baby powder.¹⁰⁴ Johnson & Johnson

94. *Id.*

95. *Id.* at 992.

96. *Id.* at 993.

97. *Id.* at 993-95.

98. *Id.* at 993-94.

99. *Id.* at 1004-05.

100. See Nicole Prefontaine, *Talcum Powder & Expert Power: Admissibility Standards of Scientific Testimony*, 59 JURIMETRICS J. 341 (2019).

101. See *Ingham v. Johnson & Johnson*, 608 S.W.3d 663 (Mo. Ct. App. 2020).

102. See Anderson, *supra* note 8.

103. See, e.g., Tina Bellon, *Jury Clears J&J of Liability in New Jersey Talc Cancer Case*, 41 No. 1 WESTLAW J. ASBESTOS 5 (2018); Tina Bellon, *New Jersey Jury Finds J&J Not Liable in Talc Cancer Trial; Company Settles Three Other Cases*, 41 No. 13 WESTLAW J. ASBESTOS 2 (2019); Nate Raymond, *Johnson & Johnson Wins California Lawsuit Claiming Asbestos in Talc Caused Cancer*, 28 No. 11 WESTLAW J. PROD. LIAB. 5 (2017); Nate Raymond, *Johnson & Johnson Wins Trial in Talc Product Liability Lawsuits*, 28 No. 2 WESTLAW J. PROD. LIAB. 4 (2017).

104. See Tiffany Hsu & Roni Caryn Rabin, *Johnson & Johnson to End Talc-Based Baby Powder Sales in North America*, N.Y. TIMES (May 19, 2020), <https://www.nytimes.com/2020/05/19/business/johnson-baby-powder-sales-stopped.html>.

attributed the decision to declining demand caused by misinformation from a “constant barrage of litigation advertising,” among other reasons.¹⁰⁵ In October 2020, the company announced it will pay more than \$100 million to settle over 1,000 lawsuits alleging that its talc products caused cancer.¹⁰⁶

IV. IMPACTS OF UNPERSUASIVE SCIENCE PREVAILING

Judicial gatekeeping of unpersuasive science is critical to the fair administration of justice and the rule of law. As a leading biotechnology company recently noted in an *amicus* brief in the Roundup litigation:

The need for gatekeeping standards is a matter of great significance to the fair administration of justice. A failure to observe proper standards for gatekeeping can have damaging consequences that can cause harm to litigants, the public, and confidence in the courts. Without any basis in science, useful products can be pulled from the market. Businesses can be destroyed. Millions upon millions of dollars in litigation costs and litigation payments can be incurred—all without any basis in fact. When this happens, respect for our legal system’s ability to resolve complex disputes can deteriorate.¹⁰⁷

Indeed, examples exist of socially beneficial products that have been withdrawn from the market because of the acceptance of unsound science in courtrooms.¹⁰⁸

Further, unsound scientific outcomes in court undermine economic growth. Capital from around the world flows into the United States because

105. Amanda Bronstad, *Expert Ruling Was ‘Tipping Point’ for J&J’s Talc Withdrawal, Lawyers Say*, LAW.COM (May 22, 2020), https://www.law.com/2020/05/22/expert-ruling-was-tipping-point-for-jjs-talc-withdrawal-lawyers-say/?cmp=share_twitter. Some plaintiffs’ lawyers contend that Johnson & Johnson’s decision to stop talc-based baby powder sales in North America is a response to a recent ruling in which a federal MDL court excluded expert testimony linking talc-based baby powder to ovarian cancer, but admitted other testimony linking the product to “inflammation and oxidative stress.” *Id.*; see also *In re Johnson & Johnson Talcum Powder Prods. Mktg., Sales Practices & Prods. Litig.*, No. 16-2738 (FLW), MDL No. 2738, 2020 U.S. Dist. LEXIS 76533, at *630 (D.N.J. Apr. 27, 2020).

106. Jef Feeley, *J&J to Pay More Than \$100 Million to End Over 1,000 Talc Suits*, BLOOMBERG.COM (Oct. 5, 2020), https://www.bloomberg.com/news/articles/2020-10-05/j-j-to-pay-more-than-100-million-to-end-over-1-000-talc-suits?utm_campaign=socialflow-organic&utm_medium=social&utm_source=twitter&cmpid=socialflow-twitter-business&utm_content=business&sref=WJKVI5nK.

107. Brief of *Amicus Curiae* Genentech, Inc. in Support of Defendant and Appellant at *3, *Hardeman v. Monsanto Co.*, Nos. 19-16636, 19-16708, 2019 WL 7494587 (9th Cir. Dec. 20, 2019); see also Travis Akin, Editorial, *Justice in the Age of Fake Science*, ST. LOUIS POST-DISPATCH (June 11, 2019) (“Justice should be blind, and justice should be certain—not based on fake science.”), https://www.stltoday.com/opinion/columnists/travis-akin-justice-in-the-age-of-fake-science/article_e4b819be-3d7b-54f0-a45b-8debd958dd12.html.

108. See *id.* at *4-8; Schwartz & Appel, *supra* note 5.

investors have faith that our nation follows the rule of law. The attractiveness of our nation as a place for investors to deploy their capital is diminished when lawsuit outcomes are unpredictable and divorced from mainstream science.

V. POSSIBLE REFORMS

Sound science does not change from one jurisdiction to the next and is “neither conservative nor liberal.”¹⁰⁹ Thus, it is not clear why we should tolerate wide divergences in the treatment of scientific evidence. This disarray undermines uniformity and predictability in the law and encourages forum-shopping.

1. *Change the Rules*

Federal Rule of Evidence 702 governs the admissibility of expert evidence and was rewritten to incorporate the various *Daubert* factors announced by the United States Supreme Court.¹¹⁰ Widespread inconsistency in the application of Rule 702 supports the need for reform to secure the promise of *Daubert*.¹¹¹ As Professor David Bernstein and defense practitioner Eric Lasker explain, “Many courts continue to resist the judiciary’s proper gatekeeping role, either by ignoring Rule 702’s mandate altogether or by aggressively reinterpreting the Rule’s provisions.”¹¹² They have proposed an amendment to Rule 702 to remedy the inconsistent enforcement of expert testimony gatekeeping that exists today.¹¹³

Additional proposed amendments to Rule 702 have been offered by Lawyers for Civil Justice “to remedy the widespread inconsistencies” in the Rule’s application by clarifying that:

- (1) [T]he proponent of the expert’s testimony bears the burden of establishing its admissibility;
- (2) the proponent’s burden requires demonstrating the sufficiency of the basis and reliability of the expert’s methodology and its application; and
- (3) an expert shall not assert a degree

109. Joe G. Hollingsworth & Mark A. Miller, *Inconsistent Gatekeeping Undercuts the Continuing Promise of Daubert* 14 (Wash. Legal Found., Critical Legal Issues: Working Paper Series No. 213, 2019), <https://www.wlf.org/wp-content/uploads/2019/07/7-19HollingsworthMillerWPfinal.pdf>.

110. See FED. R. EVID. 702 advisory committee’s note to 2000 amendments.

111. See Bernstein, *supra* note 3.

112. See David E. Bernstein & Eric G. Lasker, *Defending Daubert: It’s Time to Amend Federal Rule of Evidence 702*, 57 WM. & MARY L. REV. 1, 48 (2015). Courts still tend to conflate the concepts of sufficiency and weight in ways that maximize their discretion to keep scientifically dubious cases alive. See generally *id.*

113. *Id.* at 44.

of confidence in an opinion that is not itself derived from sufficient facts and reliable methods.¹¹⁴

Further, the Comments to Rule 702 should make clear that there is no “presumption” or “liberal thrust” toward admissibility.¹¹⁵ Currently, the 2000 Committee Notes state that, consistent with Rule 104(a) “the proponent has the burden of establishing that the pertinent admissibility requirements are met by a preponderance of the evidence.”¹¹⁶ The Comment, however, observes that “review of the caselaw after *Daubert* shows that the rejection of expert testimony is the exception rather than the Rule.”¹¹⁷ It also quotes *Daubert* that “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.”¹¹⁸

This language sends a mixed signal. The proponent bears the burden of showing the evidence is admissible, but the expectation—based on a review of case law—is that the court will likely admit the evidence, even if it is “shaky.” This language places a thumb on the scale in a way that is likely to increase variance, undermine consistency, and undermine rule of law values.

It can be difficult to achieve solutions here. As the Standing Committee for the Federal Rules has lamented, “crafting an amendment that essentially tells federal courts to ‘apply the rule’ may be challenging.”¹¹⁹ Among other problems, most courts—believing they are already applying the Rules properly—will be unlikely to change their behavior unless they identify themselves as part of the problem. Making clear that “shaky” (or “thin”) is not a synonym for “admissible” would be a good start.

114. Lawyers for Civil Justice, Comment to the Advisory Committee on Evidence Rules and its Rule 702 Subcommittee, *Clearing Up the Confusion: The Need for a Rule 702 Amendment to Address the Problems of Insufficient Basis and Overstatement*, at 2 (Sept. 6, 2019) [hereinafter *LCJ, Clearing Up the Confusion*], https://www.lfcj.com/uploads/1/1/2/0/112061707/lcj_comment_on_fre_702_--_9-6-2019.pdf; see also Lawyers for Civil Justice, Comment to the Advisory Committee on Evidence Rules and its Subcommittee on Rule 702, in *Support of Amending Rule 702 to Address the Problem of Insufficient Basis for Expert Testimony*, at 2 (Oct. 10, 2018), https://www.lfcj.com/uploads/1/1/2/0/112061707/lcj_comment_on_fre_702_--_10-10-18.pdf (promoting Rule 702 amendments to emphasize that “sufficiency of basis and reliable application are questions of admissibility and not weight” and to “enhance understanding of Rule 702’s specific requirements.”).

115. See *LCJ, Clearing up the Confusion*, *supra* note 114, at 5.

116. FED. R. EVID. 702 advisory committee’s note to 2000 amendments.

117. *Id.*

118. *Id.*

119. COMM. ON RULES OF PRACTICE & PROCEDURE, ADVISORY COMM. ON EVIDENCE RULES MINUTES OF THE MEETING OF APRIL 26-27, 2018, at 433 (June 12, 2018), https://www.uscourts.gov/sites/default/files/2018-06_standing_agenda_book_final.pdf.

2. *Change the Strategies*

Advocates also may consider pressing harder on abuse of discretion rulings at the appellate phase. Challenging an abuse of discretion is not easy, but it is possible. Appellate courts (and ultimately the United States Supreme Court) need to see how affirming “discretionary” evidentiary calls create chaos (in the form of doctrinal splits) among the federal circuits. If one of the purposes of the United States Supreme Court is to ensure uniformity among federal rulings, then showing the Court how discretionary rulings lead to different outcomes in similar cases should help bring about more definitive guidance.

Similarly, opponents of unpersuasive scientific evidence should continue to stress that, regardless of any perceived “liberal thrust,” the burden of establishing admissibility remains on the proponent.

CONCLUSION

The trends we have identified reinforce the wisdom of Judge Posner’s observation more than twenty years ago: “[T]he courtroom is not the place for scientific guesswork, even of the inspired sort. Law lags science; it does not lead it.”¹²⁰ When law lags science, it can be informed by it, and the various stakeholders in litigation can be confident that causes of action and questions of evidence are all based on both sound scientific consensus and the rule of law. When law attempts to lead science instead, by converting cutting-edge findings (or even just questions) into new causes of action, then it risks the credibility of both disciplines.

120. *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 319 (7th Cir. 1996).