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CASENOTE

***Rubanick v. Witco Chemical Corp. and
Landrigan v. Celotex Corp.: The
Admissibility of Expert Testimony in
Toxic Tort Litigation***

Alex R. DeSevo

In toxic tort litigation, plaintiffs must ordinarily establish causation through the use of expert testimony. This paper provides a discussion and analysis of the New Jersey Supreme Court's decisions in Rubanick v. Witco Chemical Corp. and Landrigan v. Celotex Corp., which broaden the standard governing the admissibility of expert testimony in toxic tort litigation. The author begins with a discussion of the "general acceptance" standard and the cases leading up to Rubanick and Landrigan. Next, the author analyzes and discusses the Rubanick and Landrigan decisions, and the split between the federal circuits as to whether district courts should "actively" or "passively" review expert testimony. The author concludes by stating that other jurisdictions should follow the Rubanick and Landrigan holdings in determining the admissibility of scientific theories of causation in toxic tort litigation.

I. Introduction

In *Rubanick v. Witco Chemical Corp.*¹ the New Jersey Supreme Court set forth a new, broader standard for New Jersey courts to use in determining the reliability of novel or emerging scientific theories of causation.² The *Rubanick* court held "that in toxic-tort litigation, a scientific theory of causation that has not yet reached general acceptance may be found to be sufficiently reliable if it is based on a sound, adequately-founded scientific methodology involving data and information of the type reasonably relied on by experts in the scientific field."³ Further, in *Landrigan v. Celotex Corp.*,⁴ the court reaffirmed *Rubanick*, and explained that "[t]he admissibility of such testimony depends on the expert's ability to explain pertinent scientific principles and to apply those principles to the formulation of his or her opinion" and "the key to admission of the opinion is the validity of the expert's reasoning and methodology."⁵

The New Jersey Supreme Court has thus recognized the difficult burden facing plaintiffs who seek to prove causation⁶ in toxic tort⁷ litigation.⁸ Ordinarily, plaintiffs establish causation by showing a reasonable connection between the defend-

1. 593 A.2d 733 (N.J. 1991).

2. *Id.*

3. *Id.* at 747-48.

4. 605 A.2d 1079 (N.J. 1992).

5. *Id.* at 1084.

6. Legal cause or proximate cause is defined as a "[s]ubstantial factor in bringing about harm." BLACK'S LAW DICTIONARY 893 (6th ed. 1990).

7. Two commentators have defined toxic tort cases as:

those in which the plaintiff seeks compensation for harm allegedly caused by exposure to a substance that increases the risk of contracting a serious disease, but does not cause an immediately apparent response. These cases generally involve a period of latency or incubation prior to the onset of the disease. In most cases the increased risk of the disease does not diminish or dissipate, even with the cessation of exposure.

Bert Black & David E. Lilienfeld, *Epidemiologic Proof in Toxic Tort Litigation*, 52 FORDHAM L. REV. 732, 733 n.1 (1984).

8. See also *Ayers v. Jackson Township*, 525 A.2d 287, 298-302, (N.J. 1987) (large class of plaintiffs brought suit against township for damage caused by toxic pollutants from landfill which contaminated plaintiffs' well water). See generally James F. O'Brien, Note, *Ayers v. Township of Jackson: Damages for the Enhanced Risk of Future Disease*, 5 PACE ENVTL. L. REV. 257 (1987).

ant's act and the plaintiff's resulting injury.⁹ The primary factor that distinguishes toxic tort litigation from more traditional tort causes of action is the difficulty of proving causation, which almost always necessitates the use of expert testimony.¹⁰ Toxic tort cases require expert testimony because jurors are usually unable to fully understand the link between exposure to a toxin and a subsequent injury without expert explanation.¹¹ In fact, almost every jurisdiction now requires toxic tort plaintiffs to prove causation through expert testimony.¹² Plaintiff's difficulty is exacerbated, however, by defense attorneys who attempt to rebut causation through opposing expert testimony.¹³

The inherent difficulty in proving causation arises because of the latency period between toxic exposure and the resulting illness.¹⁴ Often, ten or twenty years may pass between exposure and subsequent illness.¹⁵ Consequently, toxic tort plaintiffs may not realize they have been injured and may not seek compensation until many years later, when the physical manifestations of their chemical exposure become apparent.¹⁶ When there is a long latency period, plaintiffs typically must prove that their illness is not the result of exposure to other contaminants during this time period.¹⁷

Also, toxic tort plaintiffs often encounter problems in ob-

9. W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 30, at 164-65 (5th ed. 1984).

10. See EDWARD GREER & WARREN FREEDMAN, TOXIC TORT LITIGATION ¶ 5.1-5.3 (1989); see generally MARGIE TYLER SEARCY, A GUIDE TO TOXIC TORTS, § 6 (1992).

11. See Stanley Pierce et al., *Expert Testimony in Technically Complex Litigation*, 7 COOLEY L. REV. 429, 430 (1990).

12. See KATHLEEN A. TOUBY ET AL., THE ENVIRONMENTAL LITIGATION DESKBOOK 105 (1989).

13. Gary M. Zwain & Andrew D. Weinstock, *How Scientists Can Help Attorneys Defeat Speculative Toxic Tort Claims*, 6 TOXICS L. REP. (BNA) 711 (Nov. 6, 1991).

14. *Ayers v. Jackson Township*, 525 A.2d 287, 301 (N.J. 1987).

15. See *id.*

16. Jeffrey Trauberman, *Statutory Reform of "Toxic Torts": Relieving Legal, Scientific, and Economic Burdens on the Chemical Victim*, 7 HARV. ENVTL. L. REV. 177, 191 (1983).

17. *Ayers*, 525 A.2d at 301; see, e.g., *Lartigue v. R.J. Reynolds Tobacco Co.*, 317 F.2d 19 (5th Cir. 1963), cert. denied, 375 U.S. 865 (1963) (plaintiff unable to prove that smoking was the sole cause of his lung cancer).

taining evidence of causation because such evidence is usually indirect.¹⁸ It frequently consists of an expert's opinion of causation, which is formed by applying the theories from relevant scientific studies to the facts of the particular case.¹⁹ However, relying on expert opinions can be problematic because science is slow to accept new theories of causation.²⁰ For example, scientists do not fully understand carcinogens and their effects.²¹ One commentator has stated, "scientists do not yet understand the molecular model of carcinogenesis, [making it] impossible to state that a given carcinogen caused any individual tumor."²² Therefore, estimating the impact of exposure from carcinogens is difficult and uncertain.²³ This uncertainty typifies the difficulty of proving causation in toxic tort cases.

Part II of this note will provide a background of New Jersey Rules of Evidence 19 and 56(2) and New Jersey Supreme Court decisions that set the standard for the admission of expert testimony in toxic tort litigation. Parts III and IV will set forth the facts and holdings of the *Rubanick* and *Landrigan* proceedings in the Law Division, Appellate Division and New Jersey Supreme Courts. The opposing positions taken by different federal jurisdictions in determining a trial court's role in making an independent evaluation of the reliability of an expert's testimony are discussed in Part V. Part VI will analyze the *Rubanick* and *Landrigan* decisions and compare them to the standards applied in different federal jurisdictions. Finally, Part VII will conclude that state and fed-

18. Steve Gold, Note, *Causation in Toxic Torts: Burdens of Proof, Standards of Persuasion, and Statistical Evidence*, 96 YALE L.J. 376, 393-94 (1986).

19. One commentator discusses three specialties used in toxic tort litigation to establish causation: "testimony of physicians specializing in public health, occupational, and preventive medicine; expert testimony based on toxicology; and expert testimony based on epidemiological studies. None of these methods should be viewed as exclusive." Edward T. Dangel, III, *Proof of Causation in Toxic Tort Cases*, 74 MASS. L. REV. 169, 174 (1989).

20. See Troyen A. Brennan, *Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous-Substance Litigation*, 73 CORNELL L. REV. 469, 474-75 (1988).

21. *Id.*

22. *Id.* at 475.

23. *Id.* at 474-75.

eral jurisdictions should follow *Rubanick* and *Landrigan*, which broaden the standard governing the admission of expert testimony in toxic tort litigation.

II. Background

A. New Jersey Rules of Evidence 19 and 56(2)

New Jersey Rule of Evidence 56(2)²⁴ governs the admissibility of expert testimony, and is almost identical to Federal Rule of Evidence 703.²⁵ Rule of Evidence 56(2) allows witnesses, qualified under New Jersey Rule of Evidence 19²⁶ as experts due to their "knowledge, skill, experience, training, or education," to testify as to their opinions on matters "requiring scientific, technical or other specialized knowledge."²⁷ Pur-

24. New Jersey Rule of Evidence 56(2) states:

A witness qualified pursuant to Rule 19 as an expert by knowledge, skill, experience, training or education may testify in the form of opinion or otherwise as to matters requiring scientific, technical or other specialized knowledge if such testimony will assist the trier of fact to understand the evidence or determine a fact in issue. The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to him at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

N.J.R. EVID. 56(2).

25. *Ryan v. KDI Sylvan Pools, Inc.*, 579 A.2d 1241, 1247 (N.J. 1990). Federal Rule of Evidence 703 states:

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to him at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

FED. R. EVID. 703.

26. New Jersey Rule of Evidence 19 states:

As a prerequisite for the testimony of a witness there must be evidence that he has personal knowledge of the matter, or experience, training, or education, if such be required. Such evidence may be provided by the testimony of the witness himself. The judge may reject the testimony of a witness that he perceived a matter if he finds that no trier of fact could reasonably believe that the witness did perceive the matter. In exceptional circumstances the judge may receive the testimony of the witness conditionally, subject to the evidence of knowledge, experience, training or education being later supplied in the course of the trial.

N.J.R. EVID. 19.

27. N.J.R. EVID. 56(2).

suant to Rule 56(2), the court is further required to determine if an expert's data is "of a type reasonably relied upon by experts in the particular field in forming opinions."²⁸

B. Prior Cases - *Kelly*, *Windmere*, & *Ryan*

Prior to *Rubanick*, New Jersey courts relied on a "conventional test" in determining the admissibility of expert testimony.²⁹ The conventional test required an expert opinion to have been "generally accepted" in the applicable scientific community.³⁰ New Jersey's "conventional" test has its origins in the D.C. Circuit's decision in *Frye v. United States*,³¹ which developed the "general acceptance" test for the admission of evidence, requiring an expert's opinion to be generally accepted within a particular scientific field. It was this conventional test which the trial court in *Rubanick* applied, holding that "general acceptance" requires "accept[ance] by at least a substantial minority of the applicable scientific community."³²

In *State v. Kelly*,³³ the New Jersey Supreme Court considered whether expert testimony about the "battered-woman's syndrome" was admissible to support a claim of self-defense in a homicide case.³⁴ The court held that, to be admissible, expert opinion "must be at a state of the art such that an expert's testimony could be sufficiently reliable."³⁵ The opinion will be held reliable if it is "generally accepted" in the scientific community.³⁶ General acceptance can be proven through the testimony of knowledgeable experts, authoritative scientific literature, or judicial decisions.³⁷

28. *Id.*

29. *See Rubanick v. Witco Chem. Corp.*, 593 A.2d 733, 735 (N.J. 1991).

30. *See Rubanick v. Witco Chem. Corp.*, 542 A.2d 975, 982 (N.J. Super. Ct. Law Div. 1988).

31. 293 F. 1013 (D.C. Cir. 1923).

32. *Id.* at 983.

33. 478 A.2d 364 (N.J. 1984).

34. *Id.* at 368.

35. *Id.* at 379.

36. *See id.* at 380.

37. *Id.*

In *Windmere, Inc. v. International Insurance Co.*,³⁸ the court considered the admissibility of voiceprints as "reliable scientific tools for determining the identity of a human voice."³⁹ The court recognized the difficulty of establishing "general acceptance,"⁴⁰ yet reaffirmed the requirement.⁴¹ The *Windmere* test is similar to the test articulated in *Frye v. United States*,⁴² which required "general acceptance."⁴³ The *Windmere* test, like the *Frye* test, admits an expert's opinion only if the opinion has gained such acceptance in the scientific community.⁴⁴ The *Windmere* court specified three ways to prove "general acceptance": "[1] the testimony of knowledgeable experts; [2] authoritative scientific literature; and [3] persuasive judicial decisions which acknowledge such general acceptance of expert testimony."⁴⁵

In *Ryan v. KDI Sylvan Pools Inc.*,⁴⁶ the plaintiff brought a products liability suit against a pool manufacturer for injuries incurred in a diving accident.⁴⁷ The plaintiff alleged that the diving board was unsafe given the depth of the pool, and offered expert testimony in support of his allegation.⁴⁸ The opinion of defendant's engineering expert was supported by a body of statistics gathered from the expert's own investigation.⁴⁹ The New Jersey Supreme Court remanded the issue of

38. 522 A.2d 405 (N.J. 1987).

39. *Id.* at 406.

40. *See id.* at 408.

41. *Id.* at 407-08.

42. 293 F. 1013 (D.C. Cir. 1923). The *Frye* test allows the admission of expert testimony when a scientific principle or discovery has "gained general acceptance in the particular field in which it belongs." *Id.* at 1014. General acceptance occurs when a scientific principle ceases to be experimental and becomes demonstrable. *Windmere*, 522 A.2d at 407 n.2.

43. *See Rubanick v. Witco Chem. Corp.* 576 A.2d 4, 18 (N.J. Super. Ct. App. Div. 1990) (Havey, J., dissenting); Ronald J. Fleury, *Criteria Broadened for Toxic Tort Experts*, 125 N.J.L.J. 1587, 1609 (1990).

44. *Frye*, 293 F. at 1014; *Windmere*, 522 A.2d at 407.

45. *Windmere*, 522 A.2d at 408.

46. 579 A.2d 1241 (N.J. 1990). *See generally* Brian Simon, Note, *The Basis of Expert Testimony: Ryan v. KDI Sylvan Pools Lets the Expert Have Their Way*, 43 RUTGERS L. REV. 1235 (1991).

47. *Id.* at 1242.

48. *Id.* at 1243.

49. *Id.* at 1244.

the admissibility of the expert's opinion to the trial court,⁵⁰ and held that New Jersey Rule of Evidence 56(2) "require[s] that a court make an inquiry into and a finding on whether experts in the given field rely on certain information."⁵¹ If such reliance can be found then it is presumed to be reasonable."⁵² One commentator has called *Rubanick* the first progeny of *Ryan*.⁵³

III. *Rubanick v. Witco Chemical Corp.*

A. Facts

In *Rubanick*, the estates of two deceased employees brought wrongful death actions against an employer and manufacturer for the decedents' alleged toxic exposure. Ronald G. Rubanick worked for Witco Chemical Corporation from 1974 until 1979, when he was diagnosed as suffering from colon cancer.⁵⁴ Mr. Rubanick died from cancer in 1980 at the age of twenty-nine.⁵⁵ Anthony DeMaio, the other decedent in the case, was a thirty-year Witco employee who was also diagnosed as suffering from colon cancer.⁵⁶ He died at the age of fifty-two.⁵⁷

The survivors of each employee brought separate suits, which were consolidated for appeal.⁵⁸ The plaintiffs claimed that the decedents' exposure to polychlorinated biphenyls (PCBs) while on the job caused decedents' colon cancer, which resulted in their deaths.⁵⁹ One of the defendants, Monsanto Company, sold PCB fluids to Witco from 1969 until 1976.⁶⁰

50. *Id.* at 1248.

51. *Id.* at 1247.

52. *Id.*

53. Ronald B. Grayzel, *Tort Law*, 129 N.J.L.J. 105, 106 (1991).

54. *Rubanick v. Witco Chem. Corp.*, 593 A.2d 733, 735 (N.J. 1991).

55. *Id.*

56. *Id.*

57. *Id.*

58. *Rubanick v. Witco Chem. Corp.*, 576 A.2d 4, 5 (N.J. Super. Ct. App. Div. 1990).

59. *Rubanick*, 593 A.2d at 734.

60. *Id.* at 735.

Monsanto Company made a motion for a pre-trial hearing to assess the qualifications of the plaintiffs' expert, Dr. Earl Balis.⁶¹ Monsanto contended that Dr. Balis's opinions were not supported by the scientific community.⁶² The court was thus confronted with the issue of how to determine the reliability of novel or emerging scientific theories of causation.⁶³

Dr. Balis holds a doctorate in biochemistry and for thirty-seven years has been a primary cancer researcher at the Sloan-Kettering Cancer Center in New York City.⁶⁴ A former chairman of the Department of Biochemistry of Cornell University Medical College,⁶⁵ Dr. Balis has been involved in the publication of approximately 170 scientific articles, fifteen of which concerned carcinogenesis.⁶⁶ Dr. Balis was not a treating physician and did not examine either of the decedents.⁶⁷ His opinion regarding the cause of the decedents' illness was based on five factors: 1) the extremely low incidence of cancer in males under thirty years of age; 2) decedents' personal history; 3) other Witco employees' contraction of cancer; 4) the large body of evidence showing that PCBs produce cancer in experimental animals; and 5) thirteen articles on the effects of PCB exposure on animals and humans, which Dr. Balis claimed supported his opinion that PCBs are human carcinogens.⁶⁸

Despite Dr. Balis's credentials and experience, his view that PCB exposure can cause cancer in humans does not yet have full support within the scientific community.⁶⁹ The de-

61. *Id.*

62. Defendant's experts were asked whether they were "aware of any recognized valid scientific opinion, either as a consensus or as a substantial minority opinion, which would recognize PCBs as a causative factor in human cancer." All three experts answered no. *Id.* at 737.

63. *Id.* at 739.

64. *Id.* at 735.

65. *Id.*

66. *Id.*

67. *Id.*

68. *Id.* at 735-36.

69. *Id.* at 736

The trial court asked Dr. Balis whether his theory that PCBs cause cancer in human beings finds support in the scientific community. Answering that most of the scientific community 'pays [no] attention to PCBs whatsoever,'

endant produced three experts⁷⁰ who refuted Dr. Balis's theory.⁷¹ These conflicting expert opinions required the court to evaluate its role in determining the admissibility of an expert's opinion in toxic tort litigation.⁷²

B. Law Division

In *Rubanick v. Witco Chemical Corp.*,⁷³ the trial court held that the plaintiffs' expert's testimony was inadmissible because the expert's theory of causation had not been generally accepted in the scientific community.⁷⁴ The trial court determined that the "general acceptance" standard established by cases such as *Frye* and *Windmere* required that the basis of the expert's opinion be "accepted by at least a substantial minority of the applicable scientific community."⁷⁵ In holding Dr. Balis's opinion inadmissible,⁷⁶ the court noted that Dr. Balis's theory had never been "accepted in any state or federal court in the United States."⁷⁷ The court further stated that the testimony of the plaintiff's expert "as to acceptance of PCBs as human carcinogens is wholly lacking."⁷⁸

C. Appellate Division

The Appellate Division reversed the trial court's decision

Dr. Balis noted that thirteen of the thirty-nine papers he had reviewed on the subject supported his opinion.

Id.

70. Dr. Thomas Fahey is a licensed physician and board certified internist, and the deputy physician in charge of the Memorial Hospital at the Sloan-Kettering Cancer Institute and Associate Dean of Medicine at Cornell University Medical College. Dr. Raymond Harbison holds a Ph.D. in toxicology and a degree in pharmacology. He is the Director of Toxicology at the University of Arkansas in conjunction with the National Center for Toxicological Research. Dr. Philip Cole is an expert epidemiologist who is also a licensed medical doctor. Dr. Cole holds a Ph.D. from the Harvard School of Public Health, where he is a full professor. *Id.* at 736-37.

71. *Id.*

72. *Id.* at 739.

73. 542 A.2d 975 (N.J. Super. Ct. Law Div. 1988).

74. *Id.* at 984.

75. *Id.* at 983.

76. *Id.* at 975.

77. *Id.* at 981.

78. *Id.* at 983.

and remanded the case for trial.⁷⁹ The divided panel did not reach a uniform conclusion or analysis by which to resolve the standard governing the admissibility of expert opinion evidence in toxic tort litigation.⁸⁰ Nevertheless, all three judges agreed that the trial court's conventional standard, requiring that the expert's opinion be accepted by at least a substantial minority of the scientific community, was too strict.⁸¹

1. Lead Opinion

In the lead opinion, Judge Petrella held that non-medical experts such as Dr. Balis may be qualified to testify regarding novel opinions of causation based on the adequate education, training, or experience of the expert, unless the opinion is "illogical, outlandish or totally speculative."⁸² The court adopted the reasoning of *Ferebee v. Chevron Chemical Co.*,⁸³ and held that a well-reasoned opinion of causation is admissible, even if the opinion has not been generally accepted in the scientific community.⁸⁴ Judge Petrella held that Dr. Balis was an expert whose knowledge, training, and experience qualified him to testify as to the development of cancer in medical subjects.⁸⁵ Further, Dr. Balis did not have to examine the plaintiff to express his scientific opinion regarding the plaintiff's contraction of colon cancer.⁸⁶

2. Concurrence

Judge Stern agreed with both the lead opinion and dissent that a broader standard is required when an expert testifies as to causation in toxic tort litigation.⁸⁷ He disagreed with

79. *Rubanick v. Witco Chem. Corp.*, 576 A.2d 4, 15 (N.J. Super. Ct. App. Div. 1990).

80. *See id.* at 15-16 (Stern, J., concurring); Grayzel, *supra* note 53, at 107-08.

81. *See Rubanick*, 576 A.2d at 15.

82. 576 A.2d 4, 6 (N.J. Super. Ct. App. Div. 1990).

83. 736 F.2d 1529 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1062 (1984).

84. *Rubanick*, 576 A.2d at 13.

85. *Id.* at 10.

86. *Id.* at 14.

87. *Id.* at 16. Judge Stern reasoned that under the present standard Christopher Columbus could not give expert opinion on navigation and the Wright Brothers could

the lead opinion's holding that Dr. Balis's opinion was admissible, but voted to remand because upon further proof, Judge Stern believed that the plaintiffs at trial might be able to produce other evidence to support and render reliable Dr. Balis's opinion as to causation.⁸⁸ Judge Stern, like Judge Havey in the dissent, determined that Dr. Balis's opinion in the *in limine* hearing⁸⁹ was inadmissible.⁹⁰ Judge Stern reasoned, however, that the plaintiffs should be given the opportunity to present the proof necessary to sustain the admission of the plaintiffs' expert's opinion.⁹¹

3. Dissent

In his dissent, Judge Havey agreed with the lead opinion that admission into evidence of an expert's opinion as to causation need not be dependent upon "general acceptance" of the expert's underlying theory.⁹² However, he found that a well-reasoned expert opinion must find "at least some conclusive support in the scientific community" to be admissible.⁹³ Judge Havey rejected the strict "general acceptance" standard, holding that "an opinion as to causation must be accomplished on a case-by-case basis because of the fact-specific na-

not give expert opinion related to flying because "for much of their day, their views never gained 'general acceptance within the scientific community'." *Id.* at 15.

88. *Id.* at 16.

89. New Jersey Rule of Evidence 8(1) states:

When the qualification of a person to be a witness, or the admissibility of evidence, or the existence of a privilege is stated in these rules to be subject to a condition, and the fulfillment of the condition is in issue, that issue is to be determined by the judge. In his determination the rules of evidence shall not apply except for Rule 4 or a valid claim of privilege. The judge shall indicate to the parties which one has the burden of producing evidence and the burden of proof on such issue as implied by the rule under which the question arises. The judge may hear and determine such matters out of the presence or hearing of the jury. This rule shall not be construed to limit the right of a party to introduce before the jury evidence relevant to weight or credibility.

N.J.R. EVID. 8(1).

90. See *Rubanick*, 576 A.2d at 16.

91. *Id.*

92. *Id.* at 19.

93. *Id.* (emphasis in original).

ture of each case.”⁹⁴ The dissenting opinion would not, therefore, admit conclusions unsupported by factual evidence,⁹⁵ and would require “a factual and scientific basis sufficient to meet the reliability threshold.”⁹⁶

D. New Jersey Supreme Court

In *Rubanick v. Witco Chemical Corp.*,⁹⁷ the New Jersey Supreme Court created a different, more flexible standard with regard to expert testimony in toxic tort litigation.⁹⁸ The new standard will be used to determine the reliability of novel or emerging scientific theories of causation.⁹⁹ Plaintiffs will have a greater opportunity under this new standard to show a causal link between toxic exposure and subsequent injuries.

Under this standard, courts will admit scientific theories that have not gained general acceptance if they are based on “sound, adequately-founded scientific methodology involving data and information of the type reasonably relied on by experts in the scientific field.”¹⁰⁰ Such evidence must be proffered by an expert “who is sufficiently qualified by education, knowledge, training, and experience in the specific field of science.”¹⁰¹ The *Rubanick* court mandated that “[t]he expert must possess a demonstrated professional capability to assess the scientific significance of the underlying data and information, to apply the scientific methodology, and to explain the bases for the opinion reached.”¹⁰²

94. *Id.*

95. *Id.* at 20.

96. *Id.*

97. 593 A.2d 733 (N.J. 1991).

98. *Rubanick*, 593 A.2d at 750; *New Jersey Widens Admissibility of Toxic Tort Scientific Evidence*, 60 U.S.L.W. 1030 (Aug. 20, 1991); *New Jersey High Court Admits Expert Evidence Even If Not Generally Accepted in Community*, 6 Toxics L. Rep. (BNA) 330 (Aug. 14, 1991); Christopher M. Placitella, *Toxic-Tort Litigation Shapes New Expert-Witness Role*, 126 N.J.L.J. 817 (1990); George W. Conk, *New Jersey Supreme Court Clears Way for Broader Use of Epidemiological and Other Scientific Evidence*, CIVIL TRIAL BAR SECTION NEWSLETTER (N.J. State Bar Ass'n, New Brunswick, N.J.) Nov. 1991, at 2.

99. *Rubanick*, 593 A.2d at 750.

100. *Rubanick*, 593 A.2d at 747-48.

101. *Id.* at 748.

102. *Id.*

The court recognized that several other jurisdictions have adopted a "more flexible approach to the admission of causation theories in toxic-tort litigation."¹⁰³ It noted that those courts do not use the general acceptance standard, but rather look to "whether the scientific knowledge is sufficiently founded or based on a sound methodology, leaving the decision to credit the theory to the finder of fact."¹⁰⁴

The New Jersey Supreme Court thus agreed with the reasoning of *Ferebee v. Chevron Chemical Co.*¹⁰⁵ and *Wells v. Ortho Pharmaceutical Corp.*,¹⁰⁶ which applied a "passive"¹⁰⁷ approach in reviewing expert testimony under the Federal Rules of Evidence.¹⁰⁸ The *Rubanick* court quoted Judge Mikva's statement in *Ferebee* that "[j]udges, both trial and appellate, have no special competence to resolve the complex and refractory causal issues raised by the attempt to link low-level exposure to toxic chemicals with human disease."¹⁰⁹ The court recognized that a "methodology-based standard" is needed to determine the reliability of emerging scientific theories of causation.¹¹⁰

The *Rubanick* court also noted that some jurisdictions have applied an "active" standard in determining the admissibility of scientific evidence.¹¹¹ The active standard discussed in *Johnston v. United States*,¹¹² *In re "Agent Orange" Product Liability Litigation*,¹¹³ and *Brock v. Merrell Dow*

103. *Id.* at 741.

104. *Id.* at 741-42.

105. 736 F.2d 1529 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1062 (1984). See discussion *infra* notes 174-80 and accompanying text.

106. 615 F. Supp. 262 (N.D. Ga. 1985), *aff'd*, 788 F.2d 741 (11th Cir. 1986), *reh'g denied en banc*, 795 F.2d 89 (11th Cir. 1986), *cert. denied*, 479 U.S. 950 (1986). See discussion *infra* notes 181-85 and accompanying text.

107. Throughout this article, the terms "passive" and "active" are used to describe the process by which courts review the admissibility of expert testimony. Other commentators have variously used terms such as "liberal" and "conservative."

108. See *Rubanick*, 593 A.2d at 742-43.

109. *Id.* at 742 (quoting *Ferebee v. Chevron Chem. Co.*, 736 F.2d at 1534).

110. *Id.* at 743.

111. *Id.* at 744-45.

112. 597 F. Supp. 374 (D. Kan. 1984). See discussion *infra* notes 211; 213-16 and accompanying text.

113. 611 F. Supp. 1223 (E.D.N.Y. 1985), *aff'd* 818 F.2d 187 (2d Cir. 1987) *cert.*

Pharmaceuticals, Inc.,¹¹⁴ for determining the admissibility of scientific evidence was, however, rejected by this court.¹¹⁵ In rejecting the active approach, the court reasoned, "[w]e do not believe that in determining the soundness of the methodology the trial court should directly and independently determine as a matter of law that a controversial and complex scientific methodology is sound."¹¹⁶

The court held further that the approach of the Court of Appeals for the Third Circuit in *United States v. Downing*,¹¹⁷ *Hines v. Consolidated Rail Corp.*,¹¹⁸ and *In re Paoli R.R. Yard PCB Litigation*,¹¹⁹ for determining the reliability of novel scientific theories of causation is compatible with the New Jersey Rules of Evidence.¹²⁰ This approach admits new scientific evidence if the basis of the expert's testimony consists of "facts or data . . . of a type reasonably relied upon by experts in the particular field," and if the expert's technique or methodology in using the facts or data is well-founded.¹²¹ Although the *Rubanick* court recognized the Third Circuit's establishment of "two separate reliability determinations," the court declined to split the inquiry, stating that "we do not believe that a rigid dichotomy is necessary."¹²² Therefore, the *Rubanick* court adopted a single reliability inquiry which addresses the underlying methodologies of both the scientific

denied, 487 U.S. 1234 (1988). See discussion *infra* notes 205-10 and accompanying text.

114. 874 F.2d 307 (5th Cir. 1989), modified on other grounds, 884 F.2d 166 (5th Cir. 1989) cert. denied, 494 U.S. 1046 (1990). See discussion *infra* notes 217-21; 224-25 and accompanying text.

115. See *Rubanick*, 593 A.2d at 748-49.

116. *Id.* at 748.

117. 753 F.2d 1224 (3d Cir. 1985). See discussion *infra* notes 186-89; 191-94 and accompanying text.

118. 926 F.2d 262, 274 (3d Cir. 1991) (expert testimony using traditional methods such as blood tests, liver function tests, and gas chromatograph tests to sustain expert's opinion that PCBs cause bladder cancer held admissible because though the opinion was novel, the methods were not).

119. 916 F.2d 829 (3d Cir. 1990), cert. denied, 111 S. Ct. 1584 (1991). See discussion *infra* notes 195-201 and accompanying text.

120. *Rubanick*, 593 A.2d at 746.

121. *Id.* (quoting *United States v. Downing*, 753 F.2d 1224, 1237 (3d Cir. 1985)).

122. *Id.* at 747.

data and the reasoning which lead to the formulation of the expert's opinion.

IV. *Landrigan v. Celotex Corp.*

A. Facts

The plaintiff, Angelina Landrigan, sued defendants Owen-Corning Fiberglass Corp. and Celotex Corp. for the personal injuries and death of her husband.¹²³ For sixteen years, the decedent had allegedly worked with asbestos-based insulation.¹²⁴ In her suit, plaintiff claimed her husband's exposure to defendants' asbestos had caused him to contract colon cancer which resulted in his death.¹²⁵ In December of 1981, he was diagnosed as suffering from colon cancer; he died one year later.¹²⁶

At trial, plaintiff offered the expert opinions of Dr. Joseph Sokolowski, Jr., a physician who is board certified in both internal medicine and pulmonary medicine, and Dr. Joseph K. Wagoner, who is an epidemiologist and biostatistician, but is not a physician.¹²⁷ Though Dr. Sokolowski never treated the decedent, he based his conclusion that asbestos exposure caused decedent's colon cancer on decedent's "history of occupational exposure, the absence of other risk factors and the epidemiological evidence in the literature," adding, "'there is no other predisposing factor for the occurrence of carcinoma of the colon in an individual who is the age of Mr. Landrigan.'" ¹²⁸ In addition, he testified generally that asbestos can cause colon cancer.¹²⁹ The trial court determined, however, that his testimony did not establish the requisite causation between decedent's colon cancer and exposure to defendants' asbestos.¹³⁰

123. *Landrigan v. Celotex Corp.*, 605 A.2d 1079, 1082 (N.J. 1992).

124. *Id.*

125. *Id.*

126. *Id.*

127. *Id.*

128. 579 A.2d 1268, 1270 (N.J. Super. Ct. App. Div. 1990).

129. *Id.*

130. *Id.* at 1269.

Plaintiff also offered Dr. Wagoner to testify that asbestos exposure caused decedent's colon cancer.¹³¹ However, the trial court, after a Rule 8 hearing,¹³² determined that Dr. Wagoner was not qualified to testify that asbestos caused decedent's colon cancer.¹³³ Nevertheless, the trial court did permit him to testify as to his general opinion that asbestos exposure causes colon cancer and that studies have linked colon cancer to asbestos exposure.¹³⁴

B. Appellate Division

The plaintiff appealed the trial court's dismissal for failure to establish proximate cause.¹³⁵ The Appellate Division affirmed the trial court, holding that Dr. Sokolowski's testimony failed to establish causation.¹³⁶ The court stated: "Dr. Sokolowski made no allowance for the presence of other causes which have not yet been identified by medical science but which, as he acknowledged, account for most cases of colon cancer."¹³⁷ The Appellate Court pointed out that, based on the record, there was no basis upon which a jury might find a causal relationship between decedent's colon cancer and exposure to asbestos.¹³⁸ The court reasoned, "[d]ecedent's occupational exposure to asbestos fibers during his life, while a suspicious circumstance, does not supply its own incriminating link to decedent's last illness, and the fact that causation cannot be reasonably demonstrated by presently available evidence is no justification for allowing a jury to guess its way to such a result."¹³⁹

At trial, the plaintiff had also offered Dr. Joseph Wagoner, an epidemiologist and biostatistician, as an expert on

131. *Id.*

132. *See supra* note 89.

133. *Landrigan v. Celotex Corp.*, 605 A.2d 1079, 1082-83 (N.J. 1992).

134. *Id.* at 1083.

135. 579 A.2d 1268, 1269 (N.J. Super. Ct. App. Div. 1990).

136. *See id.* at 1274.

137. *Id.* at 1270.

138. *Id.* at 1274.

139. *Id.*

causation.¹⁴⁰ The Appellate Division affirmed the trial court's exclusion of Dr. Wagoner's testimony as to causation and held that his qualifications "did not endow his opinion as to proximate cause with the expertise necessary to 'assist the trier of fact to understand the evidence or determine [the] fact in issue.'" ¹⁴¹ Dr. Wagoner was qualified to give his opinion on "the relationship between asbestos exposure and the development of colon cancer, but not as to whether asbestos fiber was the causative agent of decedent's illness."¹⁴² The Appellate Division thus distinguished Dr. Wagoner's experience from Dr. Balis's experience in the *Rubanick* case.¹⁴³

C. New Jersey Supreme Court

In *Landrigan v. Celotex Corp.*,¹⁴⁴ the New Jersey Supreme Court attempted to further define the standard governing the admissibility of expert testimony in toxic tort litigation. The court held that, at a Rule 8 hearing,¹⁴⁵ epidemiologists and other experts "must be able to identify the factual bases for their conclusions, explain their methodology, and demonstrate that both the factual bases and the methodology are scientifically reliable."¹⁴⁶ The trial court must then evaluate this explanation and determine whether the opinion assists in determining a fact in issue or whether it is " 'junk science.' "¹⁴⁷

The *Landrigan* Court explained that New Jersey Rule of Evidence 56(2) requires expert testimony to be reliable, and the witness must be qualified to offer the testimony.¹⁴⁸ In re-

140. *Id.*

141. *Id.*

142. *Id.*

143. *Id.* at 1275. "In our view, [Dr. Balis's] background in the physical sciences was materially different from the experience and training of Dr. Wagoner whose interest in the subject of carcinogenesis is that of a statistician." *Id.*

144. 605 A.2d 1079 (N.J. 1992).

145. *See supra* note 89.

146. *Id.* at 1086.

147. *Id.*

148. *Id.* at 1084.

The Rule imposes three basic requirements: (1) the intended testimony must concern a subject matter that is beyond the ken of the average juror; (2) the

affirming *Rubanick*, the court further explained that the admissibility of expert testimony focuses on "the validity of the expert's reasoning and methodology."¹⁴⁹ When determining the admissibility of expert testimony, courts must "examine the manner in which experts reason from the studies and other information to a conclusion."¹⁵⁰

On remand, the *Landrigan* trial court must evaluate Dr. Sokolowski's testimony as to the validity of both the studies he relied on and of his subsequent assumption that the decedent's exposure was similar to those in the study populations.¹⁵¹ The trial court must therefore examine whether the scientific community accepts the process by which the expert reached his conclusions.¹⁵² "[W]ithout substituting its judgment for that of the expert," the trial court "should examine each step in Dr. Sokolowski's reasoning."¹⁵³

As to Dr. Wagoner's testimony, the New Jersey Supreme Court reversed the Appellate Division's holding that he was precluded from testifying specifically as to the cause of decedent's cancer.¹⁵⁴ The *Landrigan* Court affirmed the *Rubanick* holding that an expert does not have to be a physician to testify as to causation in toxic tort litigation.¹⁵⁵ The court stated, "[t]he ultimate decision whether Dr. Wagoner is qualified to render an opinion on the issue of specific causation must depend on the trial court's assessment of both his qualifications and his methodology."¹⁵⁶

field testified to must be at a state of the art such that an expert's testimony could be sufficiently reliable; and (3) the witness must have sufficient expertise to offer the intended testimony.

Id. (citing *State v. Kelly* 478 A.2d 364, 379 (N.J. 1984)).

149. *Landrigan*, 605 A.2d at 1084. The court stated, "The admissibility of such testimony depends on the expert's ability to explain pertinent scientific principles and to apply those principles to the formulation of his or her opinion. Thus, the key to admission of the opinion is the validity of the expert's reasoning and methodology." *Id.*

150. *Id.* at 1087.

151. *Id.* at 1088.

152. *Id.*

153. *Id.*

154. *Id.* at 1088.

155. *Id.*

156. *Id.* at 1088-89.

D. *Caterinicchio v. Pittsburgh Corning Corp.*

In *Caterinicchio v. Pittsburgh Corning Corp.*,¹⁵⁷ a companion case to *Landrigan*, the New Jersey Supreme Court remanded the suit to the trial court to "evaluate the testimony of plaintiff's experts under the *Landrigan* standard."¹⁵⁸ The plaintiff, Peter Caterinicchio, alleged that his work with asbestos products caused him to contract colon cancer and asbestosis.¹⁵⁹ The Appellate Division had affirmed the trial court's dismissal of plaintiff's claim for failure to establish causation.¹⁶⁰ The New Jersey Supreme Court's decision now requires the trial court to evaluate plaintiff's experts¹⁶¹ consistent with the *Landrigan* holding.¹⁶²

V. Federal Level

A. Federal Rules of Evidence

Federal Rule of Evidence 703¹⁶³ governs the admissibility of expert testimony and is analogous to New Jersey Rule of Evidence 56(2).¹⁶⁴ Both rules require that an expert's facts and data must be of the "type reasonably relied upon by experts in the particular field."¹⁶⁵ Federal Rule of Evidence 702,¹⁶⁶ like New Jersey Rule of Evidence 19,¹⁶⁷ requires an ex-

157. 605 A.2d 1092 (N.J. 1992).

158. *Id.* at 1095.

159. *Id.* at 1093.

160. *Id.* at 1094.

161. Dr. Albert Miller, a board certified physician in internal and pulmonary medicine, testified that Mr. Caterinicchio's colon cancer was causally related to asbestos exposure. *Id.* at 1093. Additionally, Dr. William J. Nicholson, an industrial hygienist and epidemiologist, testified that a causal relationship exists between asbestos exposure and colon cancer, but he did not testify as to the cause of plaintiff's cancer. *Id.*

162. *Id.* at 1095.

163. See *supra* note 25.

164. See *supra* note 24.

165. FED. R. EVID. 703; N.J.R. EVID. 56(2).

166. Federal Rule of Evidence 702 states:

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.

FED. R. EVID. 702.

pert witness to be qualified as an expert by knowledge, experience, training or education.¹⁶⁸

B. Federal Split

The federal courts are split on whether the trial court must perform an active or passive review of the reliability of an expert's testimony.¹⁶⁹

1. Passive Standard

Some federal jurisdictions have adopted a passive approach to the admission of expert testimony.¹⁷⁰ These courts hold that "[e]xpert testimony in toxic tort cases should be given minimal judicial scrutiny."¹⁷¹ Courts adopting the passive review standard will admit expert testimony and allow the opposing party to challenge it at trial.¹⁷² This creates the so called "battle of the experts" in which the jury acts as final arbiter.¹⁷³

In *Ferebee v. Chevron Chemical Co.*,¹⁷⁴ the Court of Appeals for the District of Columbia adopted the passive review approach, allowing the jury to evaluate an expert's testimony.

167. See *supra* note 26.

168. FED. R. EVID. 702; N.J.R. EVID. 19.

169. See *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1223, 1243-44 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987), *cert. denied*, 487 U.S. 1234 (1988); Bert Black, *A Unified Theory of Scientific Evidence*, 56 FORDHAM L. REV. 595, 674 (1988); L.L. Plotkin, Note, *Brock v. Merrell Dow Pharmaceuticals, Inc.: What is the Court's Role in Evaluating Expert Testimony?*, 64 TUL. L. REV. 1263, 1264 (1990); Christopher M. Placitella, *Toxic-Tort Litigation Shapes New Expert-Witness Role*, 126 N.J.L.J. 817, 831 (1990).

170. *In re Paoli R.R. Yard PCB Litig.*, 916 F.2d 829 (3d Cir. 1990), *cert. denied*, 111 S. Ct. 1584 (1991); *Wells v. Ortho Pharmaceutical Corp.*, 615 F. Supp. 262 (N.D. Ga. 1985), *aff'd*, 788 F.2d 741 (11th Cir. 1986) *reh'g denied en banc*, 795 F.2d 89 (11th Cir. 1986), *cert. denied*, 479 U.S. 950 (1986); *United States v. Downing*, 753 F.2d 1224 (3d Cir. 1985); *Ferebee v. Chevron Chem. Co.*, 736 F.2d 1529 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1062 (1984).

171. L.L. Plotkin, Note, *Brock v. Merrell Dow Pharmaceuticals, Inc.: What is the Court's Role in Evaluating Expert Testimony?*, 64 TUL. L. REV. 1263, 1265 (1990).

172. See *id.*

173. See *id.*

174. 736 F.2d 1529 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1062 (1984) (defendants were exposed to paraquat and contracted disease soon after).

The experts in *Ferebee* were the plaintiff's treating physicians, who held a novel opinion as to the cause of the plaintiff's injury.¹⁷⁵ The D.C. Circuit held that the question of causation should be determined by the experts,¹⁷⁶ and that the jury should determine which experts to credit on novel issues of medical inquiry.¹⁷⁷ The court reasoned, "[o]n questions such as [low-level exposure to toxic chemicals], which stand at the frontier of current medical and epidemiological inquiry, if experts are willing to testify that such a link exists, it is for the jury to decide whether to credit such testimony."¹⁷⁸ Chevron, the defendant, argued for the adoption of a "general acceptance" test.¹⁷⁹ In rejecting that argument, the D.C. Circuit ruled that "a cause-effect relationship need not be clearly established by animal or epidemiological studies before a doctor can testify that, in his opinion, such a relationship exists."¹⁸⁰

In *Wells v. Ortho Pharmaceutical Corp.*,¹⁸¹ the Court of Appeals for the Eleventh Circuit adopted the *Ferebee* standard in determining the admissibility of expert testimony.¹⁸² The district court heard conflicting expert opinions on whether spermicidal jelly that the mother used before she dis-

175. *Id.* at 1533.

176. *Id.* at 1535.

177. *Id.* at 1534.

178. *Id.* (emphasis in original).

179. The defendant in *Ferebee* relied on the "general acceptance" test enunciated in *Reed v. State*, 391 A.2d 364, 368 (Md. 1978). *Ferebee*, 736 F.2d at 1535.

180. *Ferebee*, 736 F.2d at 1535. The court continued:

[a]s long as the basic methodology employed to reach such a conclusion is sound, such as use of tissue samples, standard tests, and patient examination, products liability law does not preclude recovery until a "statistically significant" number of people have been injured or until science has had the time and resources to complete sophisticated laboratory studies of the chemical . . . [T]hat *Ferebee's* case may have been the first of its exact type, or that his doctors may have been the first alert enough to recognize such a case, does not mean that the testimony of those doctors, who are concededly well qualified in their fields, should not have been admitted.

Id. at 1535-36.

181. 788 F.2d 741 (11th Cir. 1986), *reh'g denied en banc*, 795 F.2d 89 (11th Cir. 1986), *cert. denied*, 479 U.S. 950 (1986).

182. *Id.* at 745.

covered her pregnancy caused her child's birth defects.¹⁸³ The district court held that plaintiff had established causation.¹⁸⁴ The Eleventh Circuit affirmed on appeal and held that "it does not matter in terms of deciding the case that the medical community might require more research and evidence before conclusively resolving the question. What matters is that this particular factfinder found sufficient evidence of causation in a legal sense in this particular case"¹⁸⁵

In *United States v. Downing*,¹⁸⁶ the Court of Appeals for the Third Circuit ruled on a district court's role in evaluating scientific methodology.¹⁸⁷ The Third Circuit held that Federal Rule of Evidence 702 requires a district court to evaluate novel scientific evidence on "(1) the soundness and reliability of the process or technique used in generating the evidence, (2) the possibility that admitting the evidence would overwhelm, confuse, or mislead the jury, and (3) the proffered connection between the scientific research or test result to be presented, and particular disputed factual issues in the case."¹⁸⁸ A district court must therefore balance its analysis of the reliability of the expert against the danger that the evidence and testimony may confuse or mislead the jury.¹⁸⁹ The *Frye* test¹⁹⁰ was rejected for policy reasons.¹⁹¹ The Third Circuit concluded that the Federal Rules of Evidence did not incorporate or repudiate the *Frye* test.¹⁹² The court reasoned

183. *Wells v. Ortho Pharmaceutical Corp.*, 615 F. Supp. 262, 266 (N.D. Ga. 1985).

184. *Id.* at 267.

185. *Wells*, 788 F.2d at 745.

186. 753 F.2d 1224 (3d Cir. 1985) (expert in the field of human perception and memory testified concerning the reliability of eyewitness identification in a criminal trial for mail fraud, wire fraud, and interstate transportation of stolen property).

187. *Id.*

188. *Id.* at 1237.

189. *Id.* at 1240.

190. The court in *Frye* stated: "while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs." *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923).

191. *Downing*, 753 F.2d at 1232.

192. *Id.* at 1235.

that the general acceptance standard is a conservative approach toward admitting scientific evidence and is "at odds with the spirit, if not the precise language, of the Federal Rules of Evidence."¹⁹³ The court held "that a particular degree of acceptance of a scientific technique within the scientific community is neither a necessary nor a sufficient condition for admissibility;" it is only one factor in a district court's analysis in determining admissibility.¹⁹⁴

In *In re Paoli R.R. Yard PCB Litigation*,¹⁹⁵ the plaintiffs brought a toxic tort action for illnesses contracted as a result of PCB exposure.¹⁹⁶ The district court had excluded parts of plaintiffs' expert testimony.¹⁹⁷ The Court of Appeals for the Third Circuit reversed and held that the district court abused its discretion in excluding parts of the experts' opinions "because the experts did not have the degree or training which the district court apparently thought would be most appropriate."¹⁹⁸ The Third Circuit determined that the district court's analysis of the expert testimony on novel scientific techniques was inadequate under the *Downing* standard,¹⁹⁹ and reasoned that "in making reliability determinations, courts must err on the side of admission rather than exclusion."²⁰⁰ The court stated "[t]he reliability inquiry . . . [must be] flexible and may turn on a number of factors."²⁰¹

2. Active Standard

Other federal jurisdictions have taken a more active approach in examining expert testimony.²⁰² In determining the

193. *Id.* at 1237.

194. *Id.*

195. 916 F.2d 829 (3d Cir. 1990), *cert. denied*, 111 S. Ct. 1584 (1991).

196. *Id.* at 835.

197. *Id.* at 855.

198. *Id.* at 856.

199. *Id.*

200. *Id.* at 857.

201. *Id.* (citing *Downing*, 753 F.2d at 1238). See *supra* notes 188-89 and accompanying text for a discussion of the *Downing* factors.

202. *Christopherson v. Allied-Signal Corp.*, 939 F.2d 1106 (5th Cir. 1991), *cert. denied*, 112 S. Ct. 1280 (1992); *Brock v. Merrell Dow Pharmaceuticals, Inc.*, 874 F.2d 307, *modified on other grounds*, 884 F.2d 166 (5th Cir. 1989), *cert. denied*, 494 U.S.

admissibility of such testimony, these courts closely examine the underlying data upon which an expert bases his conclusions.²⁰³ Jurisdictions adopting the active review standard often deem an expert's opinion inadmissible because it does not have enough support in the scientific community.²⁰⁴

In *In re "Agent Orange" Product Liability Litigation*,²⁰⁵ Chief Judge Weinstein of the Eastern District of New York adopted an active review of the expert's testimony in toxic tort litigation.²⁰⁶ Chief Judge Weinstein thoroughly reviewed the expert's data and ruled that it did not support the conclusion that Agent Orange caused the plaintiffs' illnesses.²⁰⁷ The court held that the expert's testimony was thus inadmissible.²⁰⁸ In rejecting the plaintiffs' studies, Judge Weinstein stated, "[n]one of these studies do more than show that there may be a causal connection between dioxin [the hazardous substance in Agent Orange] and disease."²⁰⁹ None show such a connection between plaintiffs and Agent Orange."²¹⁰

In *Johnston v. United States*,²¹¹ the United States District Court, District of Kansas, actively reviewed the experts'

1046 (1990); *Richardson v. Richardson-Merrell, Inc.*, 857 F.2d 823 (D.C. Cir. 1988) *cert. denied*, 493 U.S. 882 (1989); *Sterling v. Velsicol Chem. Corp.*, 855 F.2d 1188 (6th Cir. 1988) (court held testimony of clinical ecologist inadmissible); *Viterbo v. Dow Chem. Co.*, 826 F.2d 420 (5th Cir. 1987) (court held that a qualified physician's testimony was inadmissible because his opinion lacked foundation and reliability); *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1223 (E.D.N.Y. 1985), *aff'd* 818 F.2d 187 (2d Cir. 1987) *cert. denied*, 487 U.S. 1234 (1988).

203. See L.L. Plotkin, *supra* note 171, at 1266.

204. See *id.*

205. 611 F. Supp. 1223 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987) *cert. denied*, 487 U.S. 1234 (1988).

206. The court stated: "'Rigorous examination' is especially important in the mass toxic tort context where presentation to the trier of theories of causation depends almost entirely on expert testimony." *Id.* at 1244. Judge Weinstein continued, "the court may not abdicate its independent responsibilities to decide if the bases meet minimum standards of reliability as a condition of admissibility." *Id.* at 1245. "If the underlying data are so lacking in probative force and reliability that no reasonable expert could base an opinion on them, an opinion which rests entirely upon them must be excluded." *Id.*

207. *Id.* at 1234.

208. *Id.*

209. *Id.*

210. *Id.*

211. 597 F. Supp. 374 (D. Kan. 1984).

testimony in a suit under the Federal Tort Claims Act²¹² and rejected plaintiffs' expert testimony.²¹³ The experts testified that plaintiffs' cancers were causally related to radiation from their work in an aircraft factory.²¹⁴ The court, however, held that this testimony was not based on reliable evidence,²¹⁵ and reasoned that the experts' testimony did not represent "the views of the vast majority of competent, respected scientists in this field," but rather "the views of an extreme minority of scientists."²¹⁶

In *Brock v. Merrell Dow Pharmaceuticals, Inc.*,²¹⁷ the Court of Appeals for the Fifth Circuit also adopted an active review of plaintiffs' expert testimony.²¹⁸ The court addressed the issue of whether Bendectin caused plaintiffs' daughter's birth defects.²¹⁹ Each side presented experts who disagreed about the theory of causation.²²⁰ The Fifth Circuit, in adopting the active review standard, stated "[c]onfronted, as we now are, with difficult medical questions, courts must critically evaluate the reasoning process by which the experts connect data to their conclusions in order for courts to consistently and rationally resolve the disputes before them."²²¹ In adopting the approaches of the *In re "Agent Orange" Product Liability Litigation*²²² and *Richardson v. Richardson-Merrell, Inc.*,²²³ courts,²²⁴ the Fifth Circuit held "that the Brocks did not present sufficient evidence regarding causation to allow a trier of fact to make a reasonable inference that Bendectin caused Rachel Brock's limb reduction

212. 28 U.S.C. §§ 2671-2680 (1988).

213. See *Johnston*, 597 F. Supp. at 383.

214. *Id.* at 379-83.

215. *Id.* at 410.

216. *Id.* at 410-11.

217. 874 F.2d 307 (5th Cir. 1989), modified on other grounds, 884 F.2d 166 (5th Cir. 1989), cert. denied, 494 U.S. 1046 (1990).

218. See *id.* at 312-15.

219. *Id.* at 308.

220. *Id.* at 312-15.

221. *Id.* at 309-10.

222. See discussion *supra* notes 205-10 and accompanying text.

223. 857 F.2d 823 (D.C. Cir. 1988), cert. denied, 493 U.S. 882 (1989). See discussion *infra* notes 226-33 and accompanying text.

224. See *Brock*, 874 F.2d at 310-11.

defect."²²⁵

In *Richardson by Richardson v. Richardson-Merrell, Inc.*, the District of Columbia Circuit rejected the testimony of plaintiffs' principal witness on causation.²²⁶ The court rejected the expert's contention that Bendectin caused plaintiffs' child's birth defects.²²⁷ The district court determined that there was not a "battle of the experts."²²⁸ If it had been a "battle of the experts," the district court would have followed its decision in *Ferebee* and allowed the jury to determine which expert to credit.²²⁹ In affirming the court below, the D.C. Circuit distinguished its passive approach in *Ferebee* as only applying to issues which are novel and "*stand at the frontier of current medical and epidemiological inquiry.*"²³⁰ It stated "[i]f experts are willing to testify to causation in such situations and their methodology is sound, the jury's verdict should not be disturbed."²³¹ The D.C. Circuit distinguished this case from *Ferebee* because it did not involve novel theories of causation and, therefore, the court applied the active review model.²³² The court reasoned that it does not have to "accept uncritically any sort of opinion espoused by an expert merely because his credentials render him qualified to testify."²³³

In *Christopherson v. Allied-Signal Corp.*,²³⁴ the toxic tort plaintiff attempted to establish medical causation through the testimony of one expert witness.²³⁵ In determining the validity of the expert's methodology, the Fifth Circuit, en banc, applied the *Frye* test, which requires general acceptance of the

225. *Id.* at 315.

226. *See* 857 F.2d at 829-31.

227. *Id.* at 829.

228. *Id.* at 826.

229. *See id.*

230. *Id.* at 832 (emphasis in original).

231. *Id.*

232. *See id.*

233. *Id.* at 829.

234. 939 F.2d 1106 (5th Cir. 1991), *cert. denied*, 112 S. Ct. 1280 (1992).

235. *Id.* at 1108. "Dr. Miller is not an expert in either oncology or pathology." *Id.* at 1112. "[His] experience with cancer occurred during his residency when he assisted in a study of the immune system as affected by smoking and asbestos." *Id.*

methodology within the scientific community.²³⁶ The Fifth Circuit held the opinion inadmissible because it lacked general support in the scientific community,²³⁷ and stated, "the district court was within its discretion in concluding, albeit implicitly, that Dr. Miller's testimony failed to meet . . . the *Frye* test."²³⁸ The dissent charged the majority with amending the Federal Rules of Evidence to "tilt toxic tort litigation in favor of defendants."²³⁹

VI. Analysis

The *Rubanick* standard permits an expert to testify as to novel theories of causation provided that two criteria are met: first, the expert must be "sufficiently qualified by education, knowledge, training, and experience in the specific field of science,"²⁴⁰ and, second, the opinion must be based on "sound, adequately-founded scientific methodology involving data and information of the type reasonably relied on by experts in the scientific field."²⁴¹ This broad standard differs from the standard established by the D.C. Circuit in *Frye*, which requires an expert's opinion to have achieved "general acceptance" within the scientific community.

The "general acceptance" standard, as applied in *Kelly*, *Windmere*, and *Frye*, requires plaintiffs to establish that their experts' opinions are commonly held by other experts in the field. This standard precludes testimony on emerging theories of causation. Under the "general acceptance" standard, a knowledgeable doctor who recognizes a probable causal link between a toxin and an injury or disease can be precluded from testifying as to his opinion of causation. The *Rubanick* standard, however, allows such testimony from a qualified expert if the theory is based on a sound methodology involving

236. *Id.* at 1115.

237. *Id.* at 1116.

238. *Id.*

239. *Id.* at 1138.

240. *Rubanick v. Witco Chem. Corp.*, 593 A.2d 733, 748 (N.J. 1991).

241. *Id.* at 747-48.

data reasonably relied on by other experts.²⁴² Opposing counsel is then given the opportunity to rebut the expert's claim through cross-examination and by calling rebuttal experts.

In *Rubanick*, the New Jersey Supreme Court adopted the *Ferebee* approach in evaluating the admissibility of expert evidence in toxic tort litigation.²⁴³ This approach, referenced here as "passive review," makes it easier for plaintiffs to have expert witnesses testify on new scientific theories of causation because it recognizes the difficulties inherent in proving causation in toxic tort cases. Thus, the *Rubanick* approach allows the admittance of novel scientific theories,²⁴⁴ including theories which "*stand at the frontier of current medical and epidemiological inquiry.*"²⁴⁵ The evolution of and improvements in litigation techniques have resulted in an increased use of novel and complex scientific evidence to support theories of causation.²⁴⁶ The *Rubanick* court, like the courts in *Ferebee* and *In re Paoli R.R. Yard PCB Litigation*, recognized that well-qualified experts should be allowed to testify about novel theories of causation. Thus, this standard will help plaintiffs by allowing the admittance of emerging scientific theories that bolster their claims of causation.

The *Rubanick* approach is broader still than standards enunciated by other "passive review" courts. In *Rubanick*, the testifying expert, Dr. Balis, was a non-physician and had neither treated nor examined the plaintiff.²⁴⁷ Yet, this did not preclude him from testifying as to his opinion of the cause of plaintiff's illness.²⁴⁸ In fact, the *Rubanick* and *Landrigan* decisions permit a non-physician to testify as to causation in toxic tort litigation, provided he is qualified and his methodology is sound.²⁴⁹ Although the *Rubanick* court remanded the determi-

242. See *id.* at 747-48.

243. *Id.* at 750.

244. See *id.* at 747-48.

245. *Ferebee v. Chevron Chem. Co.*, 736 F.2d 1529, 1534 (D.C. Cir. 1984) (emphasis in original), *cert. denied*, 469 U.S. 1062 (1984).

246. See *GREER & FREEDMAN*, *supra* note 10, ¶ 5.1-5.3.

247. *Rubanick*, 593 A.2d at 735.

248. See *id.* at 749-50.

249. See *Landrigan v. Celotex Corp.*, 605 A.2d 1079, 1088-89 (N.J. 1992). One commentator has noted, "Until [the Appellate Division's holding in] *Rubanick*, there

nation of the admissibility of Dr. Balis's testimony, it did not conceal its view on the matter.²⁵⁰

An expert with a novel theory of causation will most likely testify against other credible experts. This creates the so-called "battle of the experts." In *Rubanick*, Dr. Balis, who holds a Ph.D in biochemistry, testified against three other experts: a licensed physician who is also a board certified internist; a Ph.D in toxicology; and an expert epidemiologist.²⁵¹ In such cases, each side has the opportunity to present all of its evidence. The jury then makes its own independent determination of whether to credit the expert.

There is a fear that experts, regardless of the facts, will testify as is required to prove the client's case. One commentator has stated: "[t]he scientific community is large and heterogeneous, and a Ph.D. can be found to swear to almost any 'expert' proposition, no matter how false or foolish."²⁵² The *Rubanick* standard attempts to prevent this, however, by requiring a showing that the expert possesses sufficient qualifications and that his theory is based on data relied on by other experts. And, if an expert does offer a foolish opinion, opposing counsel then has the opportunity to cross-examine and offer rebuttal experts.

At least three significant concerns offer a persuasive argument for the adoption of the *Rubanick* standard and its passive review of expert testimony, and for a retreat from the more restrictive "general acceptance" standard followed by

was no reported New Jersey decision permitting a non-physician to testify to the condition or cause of human disease in any single clinical situation." Christopher M. Placitella, *Toxic-Tort Litigation Shapes New Expert-Witness Role*, 126 N.J.L.J. 817, 820 (1990).

250. *Rubanick*, 593 A.2d at 749-50. The court stated:

We are in complete agreement with Judge Petrella's observation below: "It may be argued that by virtue of his specialization and research background in cancer [Dr. Balis] was more qualified than a medical doctor who is involved with the care and treatment after the fact of cancer development in patients, and including certain of the experts produced by Monsanto."

Id. at 749.

251. *Id.* at 735-37.

252. Peter Huber, *Safety and the Second Best: The Hazards of Public Risk Management in the Courts*, 85 COLUM. L. REV. 277, 333 (1985).

courts which actively review the admittance of expert testimony. First, courts which adopt the "general acceptance" standard may prevent a jury from hearing all of the plaintiff's available evidence, and may in fact prevent the plaintiff from successfully maintaining his suit. Second, such a standard infringes on the jury's role as fact finder by removing pertinent testimony from its consideration. And, third, when a court rules as a matter of law that an expert's opinion is inadmissible, it may undermine emerging scientific theories of causation.

The *Rubanick* standard will admit novel theories of causation, so long as those theories come from a qualified expert who bases his opinion on data used by other experts in the field.²⁵³ Under *Rubanick*, the court's role is to determine "whether the expert's opinion is derived from a sound and well-founded methodology that is supported by some expert consensus in the appropriate field."²⁵⁴ Under this standard, emerging scientific theories of causation are not precluded, and plaintiffs are able to produce all available evidence. The *Rubanick* standard thus recognizes and eases the difficult burden of proving causation in toxic tort litigation.

While *Rubanick* implicitly rejects the restrictive general acceptance standard in favor of a passive review standard, the *Landrigan* case attempts to further define that standard. *Landrigan* explains that the trial court must examine the "validity of the expert's reasoning and methodology" — his ability to explain and apply scientific principles in formulating his opinion as to causation.²⁵⁵

Landrigan requires that, in determining the admissibility of an expert's opinion, a trial court should look at the studies which the expert relied on in formulating his opinion. *Landrigan* seems to diverge from *Rubanick*, and appears to adopt the twin reliability analyses of the Third Circuit, in requiring separate reliability determinations for the methodologies underlying both the scientific information relied on, and the rea-

253. *Rubanick*, 593 A.2d at 747-48.

254. *Landrigan*, 605 A.2d at 1086 (citing *Rubanick*, 593 A.2d at 449-50).

255. *Landrigan*, 605 A.2d at 1084.

soning adopted by the expert in formulating his opinion. Explicitly in *Landrigan*, the court states in its remand instructions that the trial court must evaluate both the validity of the studies relied on by the expert, as well as the expert's assumptions about those studies.²⁵⁶ Therefore under *Landrigan*, not only must the court determine whether the methodology behind the studies relied on is sound, it must also determine whether the methodology behind the formulation of the expert's opinion is sound.

VII. Conclusion

Other jurisdictions should follow the lead of the *Rubanick* and *Landrigan* decisions because plaintiffs' difficult burden of proving causation in toxic tort litigation requires the use of a broad standard in determining the admissibility of expert testimony. Jurors should be allowed to consider all reliable evidence, including novel opinions which are based on sound scientific methodology and espoused by qualified experts. Courts should simply evaluate an expert's qualifications and determine whether an opinion is based on the type of data which is "relied on by experts in the scientific field."²⁵⁷

Public policy dictates that plaintiffs should have an opportunity to prove the source of their illnesses. Science has historically been slow to accept emerging scientific theories,²⁵⁸ and plaintiffs should not be penalized by the inevitable passage of time. Likewise, the jury's fact-finding role is an integral part of our judiciary system, and plaintiffs and defendants have the right to present all reliable evidence to a jury. The trial court's role in evaluating expert testimony should therefore be limited to a determination of whether the witness is a qualified expert, and an evaluation of the expert's methodology to determine if it is well-founded and the data is of the type used by other experts in determining causation.

The trial court's exploration should stop there. When a "battle of the experts" exists, a jury should be permitted to

256. *Id.* at 1088.

257. *Id.*

258. See Brennan, *supra* notes 20-23 and accompanying text.

hear all of the reliable evidence available, and to then determine which expert to accept or reject. Emerging scientific opinion, if proffered by a qualified expert and based on data used by other experts, will assist the jury in its decision-making process. Judges who attempt to intrude on the role of the jury as fact finder by independently reviewing the thought processes underlying the formulation of expert opinions may deprive plaintiffs of the opportunity to seek redress for their injuries. Therefore, courts should follow the standard enunciated in *Rubanick* and *Landrigan*, so far as those decisions broaden the criteria regarding the admissibility of expert evidence in toxic tort litigation, and let the jury decide — let it be the trier of fact.