

## Placing and Displacing Science: Science and the Gates of Judicial Power in Environmental Cases

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SCIENCE AND LAW ARE TWO DIMENSIONS OF POWER THAT HAVE A SIGNIFICANT IMPACT on people and places. Science and law often meet in cases brought before the courts, yet how courts react to scientific issues varies. In some instances, law seems to displace science, when courts treat cases as primarily legal disputes in which science plays a small role. In others, courts seem to allow science to displace judicial power, citing the complexity of science and the institutional incapacity or inappropriateness of courts to deal with these issues as a reason to decline to exercise judicial power. Why the differences? Are judges using scientific complexity or uncertainty as a tool for judicial gatekeeping? When courts define a particular issue as primarily scientific as opposed to primarily legal, what does this tell us about how courts understand the nature of different types of problems, and their own role in their resolution? What impact does this have on access to justice, and more particularly on access to the domain of legal power for those seeking to challenge, or obtain protection from, the dimension of scientific power? This paper contrasts judicial approaches to science in two legal contexts: the public law context of judicial review of environmental assessment decisions, and the private law context of toxic tort litigation. It also proposes examples of current innovations in overcoming these scientific barriers, and asks what these innovations reveal about evolving judicial attitudes toward the relative place of science and law in resolving environmental problems.

LA SCIENCE ET LE DROIT SONT DEUX DIMENSIONS DU POUVOIR QUI ONT UNE INCIDENCE IMPORTANTE sur les gens comme sur les lieux. La science et le droit se rencontrent souvent dans des causes intentées devant les tribunaux judiciaires, quoique la manière de réagir aux questions scientifiques varie d'un tribunal à l'autre. Dans certains cas, le droit semble supplanter la science, lorsque les tribunaux traitent les causes dont ils sont saisis comme des différends de nature juridique où la science joue un rôle mineur. Dans d'autres cas, les tribunaux semblent permettre à la science de supplanter le pouvoir judiciaire, offrant comme raison d'être de leur refus d'exercer leur pouvoir judiciaire la complexité de la science et l'incapacité ou l'impropriété institutionnelle des tribunaux à traiter ces questions. Comment s'expliquent ces différences? Les juges se servent-ils de la complexité ou de l'incertitude scientifique comme outil de retenue judiciaire? Lorsque les tribunaux définissent une question en particulier comme étant de nature essentiellement scientifique par opposition à une question essentiellement juridique, que doit-on déduire de la manière dont les tribunaux comprennent la nature des différents types de problèmes, et leur propre rôle dans la résolution de ces problèmes? Quelle en est l'incidence sur l'accès à la justice, et en particulier, sur l'accès au domaine du pouvoir juridique de ceux et celles qui cherchent à contester la dimension du pouvoir scientifique ou à en obtenir la protection? Cet article compare les approches judiciaires avec celle de la science dans deux contextes juridiques: le contexte du droit public de la révision judiciaire des décisions en matière d'évaluation environnementale, et le contexte du droit privé des litiges délictuels pour ce qui est des matières toxiques. Il propose en outre des exemples d'innovations actuelles permettant de surmonter ces obstacles de nature scientifique, et s'interroge sur ce que ces innovations révèlent au sujet de l'évolution des attitudes de la magistrature envers la place relative de la science et du droit dans la résolution des problèmes environnementaux.

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\* Professor, Environmental Law Group, Faculty of Law, University of Ottawa. An earlier version of this paper was originally given at the Canadian Law and Society meeting in Montreal May 2008, and elements of this line of thinking formed a part of my doctoral dissertation *The Process of Judging the Environment: Civil Procedure, Environmental Ethics and their Effects on Environmental Law* (2007). I thank my co-panellists and the participants for feedback, and also my excellent research assistants, as well as Nathalie Chalifour for her very helpful insights.

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## 1. INTRODUCTION

It is not the role of the Court in these proceedings to become an academy of science to arbitrate conflicting scientific predictions [...]. Whether society would be well served by the Court performing either of these roles, which I gravely doubt, they are not the roles conferred upon it in the exercise of judicial review [...]

Justice Barry Strayer in *Vancouver Island Peace Society v Canada*,  
(CAN Fed Ct Trial Div, 1992), 1992:3 *Federal Court Reports* 42 at para. 12.

The judges in other fields of tort law, in particular in medical malpractice suits, have been able to master the often complex and detailed evidence relating to a variety of procedures, and there is no reason why they should be thwarted in an attempt to comprehend the type of scientific evidence relevant to pollution suits.

John McLaren, "The Common Law Nuisance Actions and the  
Environmental Battle: Well-Tempered Swords or Broken Reeds?" (1972) 10:3  
*Osgoode Hall Law Journal* 505–561 at p. 509.

The increasing complexity and urgency of environmental problems are causing citizens, groups, and even political entities to turn to a variety of institutions for resolution. As one of these institutions, courts are increasingly faced with ever more challenging issues of scientific complexity and uncertainty. Problems of disease caused by toxic chemicals, the causes and consequences of climate change, and the long-term impacts of different energy sources all involve this kind of scientific challenge. If the role of courts in environmental cases is not to become "academies of science," what is the role of judges, faced with scientific complexity, in deciding the outcome of environmental disputes? Should courts of law always defer to scientific judgment in environmental cases? What impact does this have on access to justice for environmental litigants?

My goal in this paper is to investigate whether the way that courts in Canada see their own role and the role of science in adjudication acts as a barrier to litigants to obtaining access to effective justice. This question is increasingly important and not just because environmental problems are becoming more scientifically complex. It is also important because individuals, groups, and political entities are increasingly turning to the courts where legislative and executive branches are refusing or failing to address these environmental harms and risks adequately. In these circumstances, it is essential that the judicial branch fill the gap left by these other institutions of governance. If the scientific aspects of these cases are causing courts to refuse to exercise their function of legal judgment, how can this problem be overcome?

For example, when experts permit large scale open-pit tar sand mining, based on their scientific opinion that it will not cause "significant adverse environmental effects,"<sup>1</sup> citizens may want to contest this scientific judgment and the ensuing regulatory decision to permit the project to proceed. If courts simply defer to these exercises of scientific judgment, there is no effective oversight of the environmental regulatory process. This is particularly problematic where public participation in the scientific assessment and the political decision-making process may be weak.

So how should courts deal with scientific issues? My argument is that this question cannot be answered in the abstract; it requires a more context-specific analysis. The role of courts in environmental cases depends on the type of environmental problem as well as the specific legal context in question. Similarly, the various fields of science differ in terms of their purposes and methodologies. The degree to which courts see the scientific issues as being central or peripheral to the legal question to be determined, and the degree to which they defer to the science, should also vary according to the scientific and legal contexts. The questions to be asked are: What is the scope, the purpose, and the applicability of this particular exercise of scientific judgment to the task of exercising legal judgment in this case?

I will use examples of the contrasting judicial role in two areas of law: (a) the public law context and, more specifically, the role of courts and science in judicial review of environmental assessment decisions; as compared to (b) the judicial role in the private law task of resolving toxic tort cases. Since the nature of legal judgment differs in these two contexts, it follows that the use of science in coming to a legal judgment would also vary. I will use one case as an example of a poor legal decision in each of the two legal contexts of judicial review and toxic tort. I will then consider a contrasting decision in each category, which I believe demonstrates how courts can more effectively perform their role of legal judgment when faced with particular exercises of scientific judgment.

Apart from the argument for greater contextual specificity, I also want to ask why it matters whether courts abdicate their role of legal judgment in cases where they believe scientific judgment is needed. I argue that it is important to investigate the impact on the parties and on the environment of courts ceding

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1. *Pembina Institute for Appropriate Development v Attorney General of Canada (AG)*, 2008 FC 302, <<http://decisions.fct-cf.gc.ca/en/2008/2008fc302/2008fc302.pdf>>, 2008:35 *Canadian Environmental Law Reports* 3d ser. 254 at para. 27; *Canadian Environmental Assessment Act*, S.C. 1992, c. 37, 1992 *Statutes of Canada* ch. 37, <<http://laws.justice.gc.ca/en/ShowFullDoc/cs/C-15.2//en>> s. 4(2).

their task of judging to science. Lucinda Finley has addressed the increasing stringency with which US trial judges are examining expert evidence on novel science in tort law.<sup>2</sup> She argues that this has the effect of increasing the burden of proof for those affected by environmental harm, if they can get their case heard at all. This also leads to the substantive law evolving in directions not favourable to these plaintiffs nor to environmental protection. These evolving rules of law also send direct and significant messages that affect the future direction of scientific research.<sup>3</sup> In the context of Canadian environmental cases, my case studies will investigate whether judges' deference to science prevents litigants' effective access to justice. I also ask whether this is occurring in situations where those affected have also been denied participation in the process of producing scientific judgment.

I conclude that while it is true that judges are not scientists, and should not usurp that function, neither are scientists as expert, certain, or neutral as they purport to be. Law should defer to science where expertise, certainty, and neutrality are demonstrated, but only then. By contrast, courts of law are not, and do not have to be, as certain or final as they claim to be. Where there remains uncertainty, the law should adapt itself to allow for uncertainty and for temporary solutions. More importantly, scientists and government decision-makers should ensure that they provide members of the public, various interest groups, and other voices a say in risk assessment and policy making, while courts should err on the side of giving environmental litigants their day in court to argue new approaches and new perspectives on environmental issues of scientific complexity.

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## 2. THEORETICAL PERSPECTIVES: JUDGMENT AND TRUTH SEEKING IN SCIENCE AND LAW

IN THE RECENT WAVE OF TOXIC TORT LITIGATION IN THE US, volumes of jurisprudence and academic analysis have been written about the role of courts as gatekeepers, particularly in relation to the admissibility of expert evidence.<sup>4</sup> This has also opened discussion on the broader question of the different goals of judgments and the different approaches to truth seeking in science and in law. What are the purposes of science and of law? How do scientific judgments impact the act of exercising legal judgment? How do legal judgments affect the progress of science?

There has been a great deal written about the different purposes and methodologies of science and law. Generalities abound in attempting to distinguish these fields, the different approaches they take in the search for "truth," and indeed what each means by this notion of "truth."<sup>5</sup> People speak of

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2. Lucinda M Finley, "Guarding the Gate to the Courthouse: How Trial Judges Are Using Their Evidentiary Screening Role to Remake Tort Causation Rules," (1999) 49:2 *DePaul Law Review* 335–376.
  3. Finley, "Guarding the Gate," *supra* note 2 at pp. 369–375.
  4. Sidney N Lederman, "Judges as Gatekeepers: The Admissibility of Scientific Evidence Based on Novel Theories," in Joost Blom and Hélène Dumont, eds., *Science, Truth and Justice* (Canadian Institute for the Administration of Justice, Themis, 2000) 218–242, <<http://www.ciaj-icaj.ca/english/publications/2000/Lederman-2000.pdf>>.
  5. Susan Haack, "Of Truth, in Science and in Law," (2008) 73:3 *Brooklyn Law Review* 985–1008, <[http://www.brooklaw.edu/students/journals/blr/73.3.6\\_haack.pdf](http://www.brooklaw.edu/students/journals/blr/73.3.6_haack.pdf)>.

a “cultural divide” between science and law, “a conflict with its roots in different epistemologies of evidence and their impact on judgments.”<sup>6</sup> In the controversial *Daubert*<sup>7</sup> case on the admissibility of expert scientific evidence in US courts, US Supreme Court Justice Blackmun stated that “there are important differences between the quest for truth in the courtroom and the quest for truth in the laboratory.”<sup>8</sup> David Goodstein is more adamant:

The objective of the law is justice; that of science is truth. These are not at all the same thing. Justice, of course, also seeks truth, but it requires that a clear decision be made in a reasonable and limited amount of time. In the scientific search for truth there are no time limits and no point at which a final decision must be made.<sup>9</sup>

Yet how valid are these perceptions? How reflective are they of the real similarities and incompatibilities between science and law?

In terms of differences in methodology and standards of proof, John M Eisenberg provides an illuminating analysis of how a specific field of science, namely medicine, differs from adjudication. Firstly, doctors rely on probability when making diagnoses, but courts “must decide actual causality in individual cases.”<sup>10</sup> It is also often said that medicine is predictive, while courts are retrospective; and that scientific progress occurs gradually and by “a process of synthesizing the findings of myriad independent researchers working on the ground level, while changes in the law are brought about by watershed decisions handed down by high courts.”<sup>11</sup>

Mello and Brennan argue that these distinctions can be misleading.<sup>12</sup> First,

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6. John M Eisenberg, “What Does Evidence Mean? Can the Law and Medicine be Reconciled?” (2001) 26:2 *Journal of Health Politics, Policy and Law* 369–381, <<http://www.ahrq.gov/clinic/jhpl/eisenbrg.pdf>> at p. 372. Eisenberg was specifically referring to the cultural clash between medicine, a particular branch of science, and law. However, these observations also apply to the general interface between law and science.

7. *Daubert v Merrell Dow Pharmaceuticals, Inc.* (USA SC, 1993), <<http://www.supremecourtus.gov/opinions/boundvolumes/509bv.pdf>>, 509 *United States Reports* 579.

8. *Daubert*, *supra* note 7 at pp. 596–597:

Scientific conclusions are subject to perpetual revision. Law, on the other hand, must resolve disputes finally and quickly. The scientific project is advanced by broad and wide-ranging consideration of a multitude of hypotheses, for those that are incorrect will eventually be shown to be so, and that in itself is an advance. Conjectures that are probably wrong are of little use, however, in the project of reaching a quick, final, and binding legal judgment—often of great consequence—about a particular set of events in the past. We recognize that, in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes.

9. David Goodstein, “How Science Works,” in *Reference Manual on Scientific Evidence*, 2d ed. (Federal Judicial Center, 2000) 67–82, <[http://www.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf/\\$file/sciman00.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf/$file/sciman00.pdf)> at p. 81. See also Richard A Merrill, “The Legal System’s Response to Scientific Uncertainty: The Role of Judicial Review,” Symposium on Safety Assessment: The Interface between Science, Law and Regulation, (1984) 4:3-2 *Fundamental and Applied Toxicology* S418–S425 at p. S420: “While the law employs mechanisms, e.g., cross-examination, to improve its capacity to get at the truth, we do not really pretend that the legal system assures truth. Rather, it produces resolution and thus averts violence.”

10. Michelle M Mello and Troyen A Brennan, “Demystifying the Law/Science Disconnect,” (2001) 26:2 *Journal of Health Politics, Policy and Law* 429–438, <<http://www.ahrq.gov/clinic/jhpl/mello.pdf>> at p. 430.

11. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at p. 430, summarizing Eisenberg, “What does Evidence Mean?” *supra* note 6.

12. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at p. 430.

the standard of proof in tort law is on a balance of probabilities,<sup>13</sup> and the standard of proof in judicial review cases on many issues is reasonableness—neither context requires certainty. Moreover, courts in most cases are not seeking certainty but finality, which are two very different things, as we will explore in more detail below.

Second, whether law is retrospective also depends on the area of law. Mello and Brennan point out that one of the most important tests in tort law is foreseeability: “The fundamental basis for a finding of proximate causation in a negligence case is foreseeability: Could the defendant have reasonably anticipated that his or her action would cause the particular harm that the patient suffered?”<sup>14</sup> In other words, it focuses on the perspective of the defendant in the past. I would also add that the judicial vantage point depends on the goal(s) of tort law being sought. The goals of compensation and punishment, tied to the immediate parties, are certainly retrospective. However, the goals of general deterrence, behaviour modification, standard setting, and public education<sup>15</sup> are very much prospective. Further, in administrative law, while determining whether a government decision was reasonable depends on what the decision-maker knew at the time, the judgment is also intended to guide future decisions.

Not only the specific area of law, but also the particular type of science, is important. Courts have an obligation to achieve finality even in the face of uncertainty, while many argue that science does not.<sup>16</sup> Yet this depends on the field of science in question. For example, Eisenberg notes that scientific judgment in epidemiology is very different from scientific judgment in clinical medicine.<sup>17</sup> Epidemiological evidence is often used in toxic tort cases “to establish or dispute whether exposure to an agent caused a harmful effect or disease.”<sup>18</sup> Epidemiology claims to have a norm of preferring to wait for certainty. Yet this is often exemplified by the epidemiological preference of Type I errors (saying a substance is safe, when it is later revealed to be dangerous), over Type II errors (asserting a substance is dangerous when in fact it was safe).<sup>19</sup> This in fact is not waiting for certainty—this is a policy decision in the face of uncertainty to prefer risk-taking over precaution.

13. In the medical negligence case of *Snell v Farrell* (CAN SC, 1990), <<http://scc.lexum.umontreal.ca/en/1990/1990rcs2-311/1990rcs2-311.pdf>>, 2 *Supreme Court Reports* 311, at para. 34, the Supreme Court of Canada stated that “[m]edical experts ordinarily determine causation in terms of certainties whereas a lesser standard is demanded by the law.”

14. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at p. 431. Foreseeability is in fact a central aspect of several elements of the negligence test: see generally Allen M. Linden, *Canadian Tort Law*, 7th ed. (Butterworths, 2001).

15. See generally, Linden, *Canadian Tort Law*, *supra* note 14 at ch. 1.

16. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at p. 431.

17. Epidemiology is defined as “the field of public health and medicine that studies the incidence, distribution, and etiology of disease in human populations [whose] purpose [...] is to better understand disease causation and to prevent disease in groups of individuals.” Michael D Green, Michael D Freedman and Leon Gordis, “Reference Guide on Epidemiology,” in *Reference Manual on Scientific Evidence*, *supra* note 9, 333–400 at p. 335.

18. Green, Freedman and Gordis, “Reference Guide on Epidemiology,” *supra* note 17.

19. David H Kaye and David Freedman, “Reference Guide on Statistics,” in *Reference Manual on Scientific Evidence*, *supra* note 9, 83–178. In their Glossary of Terms, these errors are defined as follows at p. 176:

A statistical test makes a “Type I error” when (1) the null hypothesis is true and (2) the test rejects the null hypothesis, i.e., there is a false positive. For instance, a study of two groups may show some difference between samples from each group, even when there is no difference in the population. When a statistical test deems the difference to be “significant” in this situation, it makes a Type I error. [...] A statistical test makes a “Type II error” when (1) the null hypothesis is false and (2) the test fails to reject the null hypothesis, i.e., there is a false negative. For instance, there may not be a “significant” difference between samples from two groups when, in fact, the groups are different.

Yet even if epidemiology could be accurately characterized as waiting for certainty, this attitude is not present in other fields of science. Doctors practicing clinical medicine have to make the best decision on the evidence at hand when a patient needs treatment.<sup>20</sup> Similarly, as my case studies will demonstrate, the role of courts is very different in divergent types of litigation. The purposes of judgment, and the approaches to it, will be different in the public law context of reviewing government decisions, such as in environmental assessment cases, than in the private law realm of environmental tort litigation.

Finally, Eisenberg points out that science evolves from the “bottom up,” by a gradual meeting of the minds resulting from varied research, while law changes from the “top down,” by “sea changes in the law [...] brought about by an important single decision by a high court judge.”<sup>21</sup> However, most litigation occurs in lower courts; only when inconsistencies or debates among these lower court decisions become clear do these contentious issues rise to the highest courts.<sup>22</sup> Some also claim law differs due to the inherent conservative bias created by the system of precedent.<sup>23</sup> Yet this is similar to the system of peer review and of waiting for consensus in science. More importantly, this conservative tendency in law is not inevitable or merely traditional, but in fact a policy decision actively being made by courts.<sup>24</sup>

From this general outline of the distinctions between science and law, we can glean four main themes under which the exercise and role of judgment in science and law can usefully be compared: (i) expertise, (ii) uncertainty, (iii) finality versus adaptability, and (iv) objectivity and neutrality.

### 2.1. Expertise

Many agree with Justice Strayer’s insight in the epigraph that courts are not experts in science; they lack the institutional capacity to undertake investigations or resolve scientific debates, and they provide a poor structure for arriving at objective conclusions due to the adversarial nature of the process.<sup>25</sup> This is used to justify an argument that courts should defer to science. However, it is important to remember that Justice Strayer made this statement in a case involving judicial review of an environmental assessment decision relating to the risk of nuclear accidents from military ships,<sup>26</sup> a very specific legal and environmental context.

In fact, courts have always dealt with scientific complexity, despite a lack of expertise. Personal injury, patent law, medical negligence, drug cases—all of these involve very complex science and heated and polarized scientific debate,

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20. “Displaying notable perceptiveness that the causation issue in a toxic tort case is more like the individual clinical medical judgment than the population-wide statistical risk estimates of the epidemiologist,” Dr. Greenlick, the neutral expert epidemiologist in *Hall v Baxter Healthcare Corp.* (USA Dist OR, 1996) 947 *Federal Supplement* 1387, “noted that courts, like clinicians, have to make concrete decisions about what is causing a particular person’s illness, and often have to do so in the face of less than definitive science,” in Finley, “Guarding the Gate,” *supra* note 2 at p. 361.
  21. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at p. 432.
  22. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at pp. 431–433.
  23. Haack, “Of Truth,” *supra* note 5 at p. 1004.
  24. Finley, “Guarding the Gate,” *supra* note 2 at pp. 336–337.
  25. Heather McLeod-Kilmurray, “*Hoffman v. Monsanto*: Courts, Class Actions, and Perceptions of the Problem of GM Drift,” (2007) 27 *Bulletin of Science, Technology and Society* 188–201 at pp. 189–191.
  26. *Vancouver Island Peace Society v Canada* (CAN Fed Ct Trial Div, 1992), 1992:3 *Federal Court Reports* 42 [*Vancouver Island Peace Society* (1992)].

and courts still resolve these cases on a daily basis.<sup>27</sup> They have devised rules of evidence and methods to assess competing expert testimony and to arrive at the best *legal* conclusion. In addition, courts are gaining expertise, even if merely by exposure to the kinds of scientific evidence and reasoning used in toxic tort cases, thus narrowing the gap between judges and scientists.<sup>28</sup> So expertise alone cannot justify courts reneging on their role to resolve environmental disputes. Moreover, in environmental cases, the most frequent obstacle is not science *per se*, or even scientific complexity, but scientific *uncertainty*, and it is to this that we now turn.

## 2.2. Uncertainty

Apart from lacking scientific expertise, it can be argued that it is the uncertainty in the science of environmental cases that makes judges particularly ill-equipped to determine a “correct” answer. While science prefers to wait until it has conclusive proof before declaring judgment, courts must reach a conclusion even in the face of uncertainty.<sup>29</sup> However, these observations are more or less accurate depending on the field of science in question.

Susan Haack tries to explain why there appears to be such a high degree of uncertainty in the science used for the purposes of environmental litigation:

[E]ven when the relevant areas of science are relatively solid and respectable, the scientific issues in litigation tend to turn [...] on still-controversial scientific issues where there remains room for reasonable disagreement even among competent, honest scientists in the field. The better established it is that this substance is harmless and inert in the human body, for example, the less likely it is that it will be the subject of toxic tort litigation .<sup>30</sup>

Similarly, the more certain it is that a substance is harmful, the more likely the defendant is to settle rather than fight in court.

An even more important point is often overlooked: the relationship between uncertainty and expertise. If the justification for judges deferring to scientists is that scientists have greater expertise on questions of science, this rationale does not hold up in cases of scientific uncertainty. Where the litigation is about the specific causes of climate change, for example, neither the judges nor the scientists know the answer. If uncertainty is greater in environmental cases, this militates in favour of more, not less, judicial confidence, since even scientific experts do not know the “correct” answer. This forces scientists and policy makers to rely on value judgments, particularly at the risk management stage.<sup>31</sup> Therefore, the greater the scientific uncertainty is, the smaller the gap in expertise between judges and scientists, and the weaker the rationale for judges to defer wholeheartedly to scientific opinion in environmental disputes.

27. John PS McLaren, “The Common Law Nuisance Actions and the Environmental Battle: Well-Tempered Swords or Broken Reeds?” (1972) 10 *Osgoode Hall Law Journal* 505–561 at p. 509.

28. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10.

29. Mello and Brennan, “Demystifying the Law/Science Disconnect,” *supra* note 10 at pp. 434–435.

30. Haack, “Of Truth,” *supra* note 5 at p. 1001.

31. See Jamie Benidickson, Nathalie Chalifour, Yves Prévost, et al, *Practicing Precaution and Adaptive Management: Legal, Institutional and Procedural Dimensions of Scientific Uncertainty* (SSHRC and the Law Commission of Canada, 2005), <[http://www.ie.uottawa.ca/English/Reports/JBPP\\_Final\\_Report.pdf](http://www.ie.uottawa.ca/English/Reports/JBPP_Final_Report.pdf)> at pp. F-9 to F-13.

However, the *impression* of scientific certainty that legal judgments create is problematic. Judicial rulings making a finding of liability create the impression of scientific certainty, which is often false:

[E]ven when a question is still within the realm of reasonable scientific disagreement, the attorneys are motivated to seek out those scientists who are already most firmly convinced one way or the other. As a result, the legal process can sometimes create spurious, artificial scientific certainty, and spurious, artificial scientific doubt.<sup>32</sup>

Even more troubling, this impression of legal and scientific certainty often has the practical effect of changing the scientific research agenda, as Finley has argued in the context of tort litigation.<sup>33</sup> She provides as examples the fact that a

surprisingly large number of products, drugs, and medical devices are brought to market with disturbingly little safety testing, especially for long-term effects, or for effects on population groups, such as women or children, who were not included among the clinical trial subjects.<sup>34</sup>

Therefore, these legal judgments cannot possibly be said to be based on scientific certainty, and should not create an impression of legal certainty.

However, if we take a closer look, the purpose and message of legal judgments such as these is not that it is “true” that a particular substance caused a particular harm, but simply that, on the limited evidence before the court, this cause is *more* likely than any other causes presented, and more likely than *not*, to have caused the harm. It is thus not the legal judgment itself, but the interpretation of that judgment by others, that creates the impression of certainty. To overcome this problem, the law should change its approach by revisiting the importance of finality and by considering the possibility of adaptability in the exercise of legal judgment.

### 2.3. Finality or Adaptability?

Haack explains another difference between law and many fields of science: the need for finality, especially by courts and parties.<sup>35</sup> This tends to preclude adaptability, a very important aspect of the scientific method.

Not only does the legal system quite often want scientific answers when no warranted answers are available, it also quite often fails to adapt, or adapts painfully slowly, as new scientific answers become available. The law looks to precedent, and courts sometimes continue to follow earlier rulings based on now-superseded science.<sup>36</sup>

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32. Haack, “Of Truth,” *supra* note 5 at p. 1002.

33. Finley, “Guarding the Gate,” *supra* note 2.

34. Finley, “Guarding the Gate,” *supra* note 2 at 368.

35. Haack, “Of Truth,” *supra* note 5 at p. 986.

36. Haack, “Of Truth,” *supra* note 5 at p. 1004.

However, while the law prefers finality, environmental issues require the law and courts to factor uncertainty into their approaches. The legal goal of finality should adapt to the need to more adequately reflect the realities of scientific and environmental issues:

[D]ecisionmakers could [...] explain that in the particular arena in question, administrative and judicial decisions are contingent on the state of existing scientific knowledge and normative issues as to what society considers “acceptable” risk. Therefore, a time-limited or conditional decision is being made precisely out of respect for the need to be efficient, fair and legitimate.<sup>37</sup>

Examples exist of the interaction between science and law leading to changes in the way that law relates to science and how legal judgment is exercised when scientific issues are involved. For example, the international environmental principle of Precaution<sup>38</sup> has led to changes in the legal burden of proof. Rather than the traditional assumption that things are safe until proven harmful, the history of environmental harms has placed the burden on those proposing new products or processes to prove that they are safe.<sup>39</sup>

The standard of proof has also changed. It has become clearer that for risky products or activities, requiring “evidence of absence of danger” is a much higher standard than showing an “absence of evidence of danger.”<sup>40</sup> In environmental cases, Barton suggests a “standard of reasonable ecological concern,” falling between the civil and criminal standards, which does “not requir[e] proof from the proponents that no environmental harm would ever occur, but weigh[s] the risk of error in favor of the environment.”<sup>41</sup>

The environmental context and approaches such as Precaution can also cause courts to reevaluate what constitutes scientific expertise and in what particular environmental or legal contexts novel science should be considered helpful. They can also change what is found to be “reasonable” when applying the standard of reasonableness to judicial review of the conclusions of expert

37. Benidickson, Chalifour and Prévost, *et al.*, *Practicing Precaution*, *supra* note 31 at p. F-7. I would like to note that it was the comments of Nathalie DesRosiers, Dean of Civil Law at the University of Ottawa Faculty of Law and past president of the Law Commission of Canada, which formed part of the development of *Practicing Precaution* and was very influential on this line of reasoning.

38. *Rio Declaration on Environment and Development*, <<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163>>, (1992) 31 *International Legal Materials* 876 [Rio Declaration], Principle 15: “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

39. Benidickson, Chalifour and Prévost, *et al.*, *Practicing Precaution*, *supra* note 31 at p. F-18.

40. Benidickson, Chalifour and Prévost, *et al.*, *Practicing Precaution*, *supra* note 31 at p. B-5, citing the Royal Society of Canada, *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada* (an Expert Panel Report), <[http://www.rsc.ca/files/publications/expert\\_panels/foodbiotechnology/GMreportEN.pdf](http://www.rsc.ca/files/publications/expert_panels/foodbiotechnology/GMreportEN.pdf)> (Royal Society of Canada, 2001) at p. 198.

41. Benidickson, Chalifour and Prévost, *et al.*, *Practicing Precaution*, *supra* note 31 at p. F-19, citing Charmian Barton, “The Status of the Precautionary Principle in Australia: Its Emergence in Legislation and as a Common Law Doctrine,” (1998) 22:2 *Harvard Environmental Law Review* 509–558 at p. 540, which refers to the decision in *Simpson v Ballina Shire Council*, 1994 NSWLEC 43, <<http://www.austlii.edu.au/au/cases/nsw/NSWLEC/1994/43.html>>, 1994:82 *Local Government and Environmental Reports of Australia* 392.

decision-makers.<sup>42</sup> Further, they may cause courts to reconsider the rationale for judicial deference to scientific judgment in particular cases.<sup>43</sup> This is particularly true when the deference is based on the perceived objectivity or neutrality of scientific opinions.

#### 2.4. Objectivity and Neutrality

One similarity between science and law is their promise of objectivity and neutrality. However, it has been widely demonstrated that science can be used not as a source of objective facts, but as a tool of persuasion.<sup>44</sup> Science often only answers the questions we ask of it, and this is even more true of scientific evidence given on a partisan basis in litigation:<sup>45</sup>

The scientific evidence in toxic tort litigation, for example, often hinges on epidemiological studies undertaken by defendant manufacturers, whether for the purpose of obtaining Food and Drug Administration (“FDA”) approval or in anticipation of the possibility of such litigation. Sometimes such studies are designed to make it more likely that they will detect favourable data than that they will detect unwelcome trends. [...] And because of its adversarial character, the legal system tends to pull in scientists from the farther ends of the spectrum of scientific opinion.<sup>46</sup>

Doremus and Tarlock<sup>47</sup> emphasize that many of the assumptions made in science, such as the margin of safety, are contestable, and require judgment.<sup>48</sup> Further, so-called “technical decisions” often mask policy preferences. Doremus and Tarlock call for a clear distinction to be made between technical and policy aspects of risk management.<sup>49</sup>

I believe this approach would benefit judicial decision-making as well.

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42. See, for example, David L VanderZwaag, Susanna D Fuller and Ransom A Myers, “Canada and the Precautionary Principle/Approach in Ocean and Coastal Management: Wading and Wandering in Tricky Currents,” (2002-2003) 34:1 *Ottawa Law Review* 117–158, <[http://www.fmap.ca/ramweb/papers-total/Vanderzwaag\\_Fuller\\_Myers\\_2003.pdf](http://www.fmap.ca/ramweb/papers-total/Vanderzwaag_Fuller_Myers_2003.pdf)> at p. 128. Héliène Trudeau argues, in “La précaution en cas d’incertitude scientifique: une des interprétations possibles de l’article 20 de la Loi sur la qualité de l’environnement,” (2002) 43:1 *Cahiers de Droit* 103–136 at p. 116, that “it is easy to imagine that the Precautionary Principle could be invoked against a public decision-maker who, despite the presence of scientific controversy with regard to the toxicity of a product, nonetheless authorizes its use. In these circumstances, the Precautionary Principle could justify, for example, the quashing of the administrative decision by the courts” (translation by author), cited in Benidickson, Chalifour and Prévost, et al., *Practicing Precaution*, supra note 31. However, there is discussion that “in the case of many domestic and international courts, when faced with arguments regarding the precautionary principle, the degree of deference depends on whether the precautionary principle is being used as a shield or a sword.” Benidickson, Chalifour and Prévost, et al., *Practicing Precaution*, supra note 31 at p. F-13. That is, where agencies are defending precautionary decisions, courts tend to defer; where plaintiffs are arguing there was not enough precaution exercised, courts tend to reject such arguments. See Elizabeth Fisher, “Is the Precautionary Principle Justiciable?” (2001) 13:3 *Journal of Environmental Law* 315–334 at pp. 321–330; see also Geneviève Cartier, “Le principe de précaution et la déférence judiciaire en droit administrative,” (2002) 43:1 *Cahiers de Droit* 79–101.
43. See Benidickson, Chalifour and Prévost, et al., *Practicing Precaution*, supra note 31 at F-15.
44. John Alder and David Wilkinson, *Environmental Law and Ethics* (MacMillan Press, 1999) at pp. 18–19.
45. Holly Doremus and Dan Tarlock, “Science, Judgment and Controversy in Natural Resource Regulation,” (2005) 26 *Public Land & Resources Law Review* 1–38, <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=788045#](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=788045#)>; Mello and Brennan, “Demystifying the Law/Science Disconnect,” supra note 10; Finley, “Guarding the Gate,” supra note 2.
46. Haack, “Of Truth,” supra note 5 at p. 1001.
47. Doremus and Tarlock, “Science, Judgment and Controversy,” supra note 45.
48. My thanks to Prof. Andrew Green for the reference to Doremus and Tarlock.
49. Doremus and Tarlock, “Science, Judgment and Controversy,” supra note 45.

Courts are often not seeking neutrality when they raise scientific complexity or uncertainty, but are using them as a shield to hide policy preferences. For example, in discussing the increasing stringency with which trial judges are examining expert evidence on novel science in US courts in relation to tort law, Finley suggests this has implications for the substantive law that are often overlooked or subsumed under the guise of scientific rigor.<sup>50</sup> She argues that under the semblance of screening expert testimony:

federal trial judges in products liability cases [...] have actually been making legal rules about what types and strengths of scientific evidence are necessary in order to prove causation [and] making profoundly normative judgments about the social allocation of risk and who should bear the burden of scientific uncertainty or controversy—injured people or manufacturers of the products alleged to have caused those injuries? [...] Judges have been using their evidentiary gatekeeper power to squarely align tort law with the conservative causal normative principles of epidemiology, thus moving the law sharply away from the more consumer protective social policies about risk embodied in the safety regulatory system.<sup>51</sup>

She further argues that this debate is hidden behind the discussion of scientific technicalities, and that this has a differential impact on various groups within society because tort rulings that causation is impossible to prove affect both the scientific research agenda and the evolution of substantive law in ways that are far from objective or neutral.<sup>52</sup>

With reference to legal judgments having an impact on science, Finley argues that judicial findings of liability in toxic tort and products liability litigation tend to spur more scientific research into the issues in question, while findings that causation is impossible to prove discourage further research. This exacerbates the already disparate result that issues affecting minority or disadvantaged groups get less attention within the scientific community:

There are also likely to be subtle, but significant gender, race, and class implications of the heightened requirements for proof of causation. Certain social groups have traditionally drawn greater research interest and research dollars.<sup>53</sup>

In my view, these are the same societal groups that are most likely to lack the resources and expertise to participate effectively, or even at all, and to make themselves heard during the process of passing environmental laws that set the rules governing these groups' protection and the permitted activities of polluters. For example, in *Hoffman v Monsanto*,<sup>54</sup> which is analyzed below, the environmental harm alleged is the drift of genetically modified (GM) seeds.

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50. Finley, "Guarding the Gate," *supra* note 2 at pp. 335–336.

51. Finley, "Guarding the Gate," *supra* note 2 at pp. 335–336.

52. Finley, "Guarding the Gate," *supra* note 2 at p. 336.

53. Finley, "Guarding the Gate," *supra* note 2 at p. 373. She also notes at p. 374 that "[t]he societal groups most likely to be under-studied by the research community are often going to be the same groups whose health concerns have received less initial scrutiny from product or drug manufacturers."

54. *Hoffman v Monsanto Canada Inc.*, 2005 SKQB 225, <<http://www.canlii.org/en/sk/skqb/doc/2005/2005skqb225/2005skqb225.html>>, 2005:15 *Canadian Environmental Law Reports 3d ser.* 42 [*Hoffman (SKQB)*], affirmed 2007 SKCA 47, <<http://www.canlii.org/en/sk/skca/doc/2007/2007skca47/2007skca47.pdf>> [*Hoffman (CA)*].

There has been widespread criticism of the regulatory structure in Canada through which corporations obtain permission to release and commercialize GM seeds, and particularly the lack of transparency and public participation involved.<sup>55</sup> In environmental contexts, affected persons excluded from the process by which scientific judgments are exercised often also face barriers in challenging these systems through litigation. These affected persons are also likely to lack the means and capacity to bring cases to court to challenge the governmental or corporate actions that led to the environmental health risks to which they have been exposed. This brings us full circle, since most of the cost and difficulty of litigating environmental cases is the necessity of hiring scientific experts to testify. These combined effects have implications for access to justice. All of these concerns mean that the interaction of science with law has a significant impact on the evolution, or lack thereof, of substantive law. It also often impedes access to justice for parties suffering environmental harm. This is particularly troubling since often the people who face impediments in accessing the political process, and who feel excluded from scientific assessment processes, are also being denied access to challenge these decisions in the institutions designed expressly for this purpose.

In the context of Canadian environmental law, the following case studies will investigate whether judges use the claim of scientific complexity or uncertainty to abdicate their role in exercising legal judgment to provide justice to parties in environmental cases.

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### 3. CASE STUDIES: SCIENTIFIC JUDGMENT AND LEGAL DEFERENCE IN RECENT ENVIRONMENTAL CASES

TWO OF THE MOST IMPORTANT AND CONTENTIOUS ROLES of courts in environmental disputes are judicial review of environmental assessment and judicial resolution of tort cases in environmental situations. These case studies are useful to contrast since judicial review of environmental assessment involves courts playing a public law role, while the adjudication of toxic torts is generally treated as falling primarily in the private law sphere.

#### *3.1. The Public Law Context: Judicial Review of Environmental Assessment Decisions*

Environmental assessment (EA) has been defined as “a sophisticated legislative system for addressing the uncertainty surrounding environmental effects.”<sup>56</sup> It involves a two-stage process: first, the scientific assessment of whether a proposed project is likely to cause “significant adverse environmental effects,” and then the executive judgment of whether to approve the project.<sup>57</sup> The EA process “mandates early assessment of adverse environmental consequences as well as mitigation measures, coupled with the flexibility of follow-up processes capable

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55. Jennifer Chandler, “The Regulation of Genetically Modified Plants: Authorization of Unconfined Environmental Release,” in Benidickson, Chalifour and Prévost, *et al.*, *Practicing Precaution*, *supra* note 31 at pp. D-35 to D-60.

56. *Pembina Institute*, *supra* note 1 at para. 34.

57. *Pembina Institute*, *supra* note 1 at para. 14.

of adapting to new information and changed circumstances. The dynamic and fluid nature of the process means that perfect certainty regarding environmental effects is not required.<sup>58</sup>

The evaluation of whether the project will create “adverse environmental effects” and of whether these effects are “significant” enough to warrant refusing or altering a project is largely a scientific determination. This raises the distinction between risk assessment and risk management, with risk assessment being more closely linked to objective, scientific approaches and risk management being more openly based on values and social and political choices of acceptable risk.<sup>59</sup> These two distinct ideas are comparable to the difference between the two grounds on which courts, when engaged in judicial review of a decision in relation to a proposed project, can defer. They can defer to the *scientific* expertise on which the decision-maker based the decision or to the regulatory discretion granted to the ultimate *political* decision maker in the environmental assessment scheme as currently structured in Canada.

Once an environmental assessment has been completed, a minister grants, or withholds, approval for the project in question based on the minister’s opinion whether the project will, or will not, create “significant adverse environmental impacts.”<sup>60</sup> If affected persons want to challenge this decision, they can bring an application to have the courts judicially review this exercise of executive power.

Canadian courts were quite active in strengthening the environmental assessment process in its early days, particularly by deciding that the duties it imposed on governments were mandatory.<sup>61</sup> More recently, there has been a significant amount of deference to scientific expertise and to the regulatory discretion granted to the administration. The question is whether this deference is justified. For example, in the context of judicially reviewing EA decisions, how does the role of courts fit with the four themes of comparison—(i) expertise, (ii) uncertainty, (iii) finality versus adaptability, and (iv) objectivity and neutrality—identified in Part 2 of this article?

The legal expertise required is to be able to determine whether the scientific judgment in the EA, and the executive decision whether to approve the project, are “reasonable.” Since the main purpose of EA is to create a process for anticipating and preventing environmental harm, the role of *certainty* is clear in this context. Scientific certainty is not a prerequisite for executive decisions as to whether a proposed project should be approved. Indeed, the *Canadian Environmental Assessment Act* (CEAA) expressly recognizes the uncertainty in this context, and mandates that the regulator must exercise precaution in the face of this uncertainty.<sup>62</sup>

58. *Pembina Institute*, *supra* note 1.

59. However, many dispute the objectivity even within the risk assessment stage, in particular Doremus and Tarlock, “Science, Judgment and Controversy,” *supra* note 45.

60. *Pembina Institute*, *supra* note 1 at para. 27.

61. Jamie Benidickson and Heather McLeod-Kilmurray, “Canada,” in Kurt Deketelaere, Louis J Kotzé and Alexander R Paterson, eds., *The Role of the Judiciary in Environmental Governance: Comparative Perspectives* (Kluwer Law International, 2009) 209-248.

62. Indeed, the CEAA is one of the few pieces of Canadian environmental legislation which expressly creates an enforceable legal duty on the government to apply the precautionary principle: “In the administration of this Act, the Government of Canada, [...] and all bodies subject to the provisions of this Act [...] shall exercise their powers in a manner that protects the environment and human health and applies the precautionary principle.” *Canadian Environmental Assessment Act*, *supra* note 1, s. 4(2).

### In terms of finality, the EA involves

early assessment of adverse environmental consequences as well as mitigation measures, coupled with the flexibility of follow-up processes capable of adapting to new information and changed circumstances [and therefore t]he dynamic and fluid nature of the process means that perfect certainty regarding environmental effects is not required.<sup>63</sup>

However, in reality, this often leads only to changes in *how* the project proceeds; the decision that the project *will* proceed is usually a final one.<sup>64</sup>

The EA process puts the issues of objectivity and neutrality in stark relief. Boyd and others have clearly criticized the political nature of project approvals,<sup>65</sup> an aspect that is very evident in *Pembina Institute*, discussed in Part 3.1.2. If courts are deferring based on a presumption that the scientific EA process is neutral or that executive decisions whether to approve projects are objective, this deference is often misplaced.

Finally, I will inquire in these case studies what impact judicial deference has on access to justice for the people affected. One of the most important critiques of the environmental assessment system is the regulator's reliance on the project proponent's self-assessment. While very large projects that go to the Comprehensive Assessment or Panel Review stage involve significant opportunities for public involvement, few projects reach this stage, and for those that do, the ultimate decision whether to permit a project to go forward resides in the discretion of the appropriate minister.<sup>66</sup> So again, if those affected feel they have not had their say or are being adversely affected by the system in place or by the particular decision reached, a final avenue of review is closed if the courts cede their role of judgment to science.

#### 3.1.1. Highly Deferential Approaches: *Vancouver Island Peace Society v Canada*

In the case of *Vancouver Island Peace Society*, where Justice Strayer made his famous statement, a public interest group challenged Orders in Council approving "visits of nuclear-powered and nuclear-armed vessels to Canadian ports"<sup>67</sup> on the ground that they had not been subject to environmental assessment as required under the *Environmental Assessment Review Process Guidelines Order*

63. *Pembina Institute*, *supra* note 1 at para. 34.

64. David Boyd makes this same point: "Environmental groups and Aboriginal people, who have filed most of the lawsuits to date, see EA as a forum for determining *whether* a particular project should proceed. In contrast, government and industry tend to view EA as a process to refine *how* a project will proceed in a manner that minimizes environmental impacts; they assume that the project will proceed because economic growth is paramount." David R Boyd, *Unnatural Law* (UBC Press, 2003) at p. 160.

65. Boyd, *Unnatural Law*, *supra* note 64. See also Meinhard Doelle *The Federal Environmental Assessment Process: A Guide and Critique* (LexiNexis, 2008); (2010) JELP special edition on Environmental Assessment (forthcoming); Andrew Green "Discretion, Judicial Review, and the *Canadian Environmental Assessment Act* (2002) 27 *Queen's Law Journal* 785.

66. *Canadian Environmental Assessment Act*, *supra* note 1, s. 37.

67. *Vancouver Island Peace Society (1992)*, *supra* note 26 at para. 2.

(EARPGO).<sup>68</sup> The public interest group's concerns related to the risks of nuclear accident and radiation exposure and the importance of allowing the public an opportunity to comment on an environmental assessment.<sup>69</sup>

The degree of deference to the government's decision to permit these visits by the court is very clear from the length of the reasons—a mere 16 paragraphs. Strayer J was very firm about the role of courts in environmental assessment cases. He clarified that there is an important difference between cases where the government had failed to do any environmental assessment at all and the courts ordered that the duty to assess was mandatory. By contrast, where the government has undertaken an assessment and the applicants challenge its adequacy, Strayer J concludes, drawing on a list of precedents, that the courts may not substitute their opinion “in respect of the Minister's findings of fact and of opinion,”<sup>70</sup> but are tasked merely with ensuring the government correctly interprets and complies with the law.

Apart from the often repeated adage that courts are not academies of science, Strayer J also clarified his reasoning in this way:

In carrying out its responsibilities under section 12 of the Guidelines Order, an initiating department must make an informed prediction of the possibilities and likelihoods of adverse effects and some calculation as to whether those effects may be “significant.” Such matters are not only incapable of precise proof but they implicitly involve value judgments as to what is “significant” in relation to both private and public interests. In reviewing the decision of an initiating department taken under section 12, the Court should not interfere unless it is satisfied that there is no reasonable basis for the decision [...]. Within this restricted role of the Court, there is no place for the presentation of factual or expert opinion on the nature or degree of potential environmental effects as such.<sup>71</sup>

After Justice Strayer refused to turn the judicial review application into an action, the judicial review went ahead, and the trial and appeal divisions agreed that the Guidelines Order did not apply to the royal prerogative exercised by Orders in Council, so there was no legal duty to do an EA.<sup>72</sup> Nuclear-armed and nuclear-powered ships continue to visit Canadian ports to this day.

It should be emphasized that this case had very little to do with scientific

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68. Justice Strayer's reasons in fact related to a side issue, namely the request by the government to have the group's application for judicial review turned into an action so that full argument on the facts could be made, which the group resisted as creating unnecessary delay and cost. Strayer J denied the motion to proceed by way of action since “both the applicants and the respondents have misconceived the nature of the role of the Court in dealing with [the application for judicial review], both sides seemingly assuming that it was the responsibility of the Court to sit on appeal from the factual determinations of the ‘initiating department’ or any others of the respondents in relation to the potential hazards involved in these visits of naval vessels and in relation to the existence of such public concern that a public review would be ‘desirable.’” *Vancouver Island Peace Society (1992)*, *supra* note 26 at para. 5.
69. *Vancouver Island Peace Society v Canada* (CAN FC Trial Div, 1994), <<http://reports.fja.gc.ca/eng/1993/1994fca0336.html/1994fca0336.html.html>>, 1994:1 *Federal Court Reports* 102, [*Vancouver Island Peace Society (1993)*], affirmed (CAN FCA, 1995) 16 *Canadian Environmental Law Reporter, new series* 24.
70. *Vancouver Island Peace Society (1992)*, *supra* note 26 at para. 6, citing *Canadian Wildlife Federation Inc. v Canada (Minister of Environment)* (CAN FC Trial Div, 1989), 4 *Canadian Environmental Law Reports, new series* 201, affirmed (CAN FCA, 1990) 1991:1 *Federal Court Reports* 641 at 661.
71. *Vancouver Island Peace Society (1992)*, *supra* note 26 at paras. 7–8.
72. *Vancouver Island Peace Society (1993)*, *supra* note 68.

truths, and much more to do with deference to executive discretion in matters of national security. The court should have kept this decision out of the realm of science altogether and just called it non-justiciable on the grounds of national security and executive prerogative.<sup>73</sup> This is what was done on the main judicial review application, and the appeal court agreed.<sup>74</sup>

Instead, the pronouncement of Justice Strayer on this side motion in the case created a forceful precedent suggesting that courts should throw up their hands in the face of scientific complexity. The message is that courts should presume that they should defer to the regulator unless there is a very strong indication that there was no reasonable basis at all for the regulator's scientific conclusions. In the environmental context, a more precautionary presumption would be that large development projects are inherently harmful to the environment and therefore the science should be very clear, and the regulatory decision expressly justified, before closing the courthouse door to litigants. This is the kind of approach taken in the two cases to which I now turn.

### 3.1.2. A Better Approach: *Pembina Institute and Massachusetts v Environmental Protection Agency*

In *Pembina Institute for Appropriate Development v Canada (AG)*,<sup>75</sup> Pembina challenged an environmental assessment of the Kearl oil sands project, which had been subjected to a Joint (federal and provincial) Panel Review<sup>76</sup> under the CEAA. The Joint Panel concluded that with mitigation measures in place, "the Project was not likely to cause significant adverse environmental effects,"<sup>77</sup> which led the relevant Ministers to approve the project.<sup>78</sup> Pembina alleged that the EA was flawed because it relied too much on an external Cumulative Effects Management Association in relation to some aspects of monitoring the project; it did not give adequate consideration to the effects of the project on endangered species; and the assessment of the environmental effects of the greenhouse gas emissions associated with the project, particularly the use of intensity based

73. This is what Chief Justice Roberts would have done in the climate change case, *Massachusetts v Environmental Protection Agency* (USA SC, 2007), <<http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf>>, 127 *Supreme Court Reporter* 1438 at p. 1464, in which he dissented:

Apparently dissatisfied with the pace of progress on this issue in the elected branches, petitioners have come to the courts claiming broad-ranging injury, and attempting to tie that injury to the Government's alleged failure to comply with a rather narrow statutory provision. I would reject these challenges as non justiciable. Such a conclusion involves no judgment on whether global warming exists, what causes it, or the extent of the problem. Nor does it render petitioners without recourse. This Court's standing jurisprudence simply recognizes that redress of grievances of the sort at issue here "is the function of Congress and the Chief Executive," not the federal courts.

(internal quotation omitted).

74. *Vancouver Island Peace Society* (1993), *supra* note 68.

75. *Pembina Institute*, *supra* note 1.

76. The Canadian Environmental Assessment Agency explains the nature of review panels on its website:

Assessments by a review panel appointed by the Minister of the Environment may be required when the environmental effects of a proposed project are uncertain or likely to be significant or when warranted by public concerns. Review panels offer individuals and groups, with different points of view, a chance to present information and express concerns. Projects undergoing a comprehensive study, a mediation or review panel, must include a consideration of alternative means of carrying out the project, as well as the project's purpose and effects on the sustainability of renewable resources. Follow-up programs are mandatory for projects after a comprehensive study, mediation or review panel.

The Canadian Environmental Assessment Agency, <[http://www.ceaa.gc.ca/013/intro\\_e.htm](http://www.ceaa.gc.ca/013/intro_e.htm)>.

77. *Pembina Institute*, *supra* note 1 at para. 12.

78. *Pembina Institute*, *supra* note 1 at para. 12.

targets, were inadequately dealt with by the Assessment.<sup>79</sup>

The Federal Court was innovative in stressing that, while it agreed that courts must defer to expertise, regulators must back up expertise with reasons that can be evaluated and merit deference. The court stated that the standard of review on questions of law, such as interpreting the EA legislation, was correctness, but that “issues relating to weighing the significance of the evidence and conclusions drawn from that evidence including the significance of an environmental effect are reviewed on a standard of reasonableness *simpliciter*,”<sup>80</sup> that is, they require some deference from the reviewing court. The court deferred to the expertise of the Panel on most of the issues raised by the applicants, though it did review the evidence the Panel cited and assessed the reasonableness of the Panel’s conclusions. Much of the focus was on mitigation measures, and the uncertainty that the applicants alleged surrounded these. However, the court was innovative in stressing that while courts must defer to expertise, that expertise must be clearly demonstrated.

Justice Tremblay-Lamer agreed that the Panel’s “conclusion that the adverse environmental effects of greenhouse gas emissions of the Project would be insignificant” and its failure “to comment on the effectiveness of intensity-based ‘mitigation’” were reviewable errors of law to be reviewed on a standard of correctness.<sup>81</sup> This is the innovative analysis from the *Pembina Institute* case on the role of expert decision-makers. The case’s notion that the purposes and methods of the scientific experts must shape the corresponding role of the reviewing court is also very important:

While I agree that the Panel is not to engage in policy recommendation, nevertheless, it is tasked with conducting a science and fact-based assessment of the potential adverse environmental effects of a proposed project. In the absence of this fact-based approach, the political determinations made by final decision-makers are left to occur in a vacuum[.] I recognize that placing an administrative burden on the Panel to provide an in-depth explanation of the scientific data for all of its conclusions and recommendations would be disproportionately high. However, given that the Report is to serve as an objective basis for a final decision, the Panel must, in my opinion, explain in a general way why the potential environmental effects, either with or without the implementation of mitigation measures, will be insignificant. [...] I am fully aware of the level of expertise possessed by the Panel. The record shows that they had ample material before them relating to the issue of greenhouse gas emissions and climate change, and thus any articulated conclusions drawn from the evidence should be accorded a high measure of deference. However, this deference to expertise is only triggered when those conclusions are articulated.<sup>82</sup>

However, the federal Cabinet at the time strongly supported tar sands and this project, and the federal Department of Fisheries and Oceans re-issued

79. *Pembina Institute*, *supra* note 1 at paras. 36–82.

80. *Pembina Institute*, *supra* note 1 at para. 37.

81. *Pembina Institute*, *supra* note 1 at para. 41.

82. *Pembina Institute*, *supra* note 1 at paras. 72–73, 75.

the permit.<sup>83</sup> Critics alleged the federal Cabinet fast-tracked the project due to its political and economic reliance on the oil sands industry.<sup>84</sup> This demonstrates that even when courts allow the adequacy of the science to be challenged in environmental cases, the executive branch still has considerable discretion to allow environmental harm to proceed. However, the reasons and order in *Pembina Institute* remain very important as precedent for the relative roles of scientific and judicial judgment in this context.

A similar approach to the Federal Court of Canada in *Pembina Institute* was taken by the majority of the US Supreme Court in the climate change case, *Massachusetts v EPA*.<sup>85</sup> The Court held that while it lacked the expertise to determine whether greenhouse gas emissions caused global warming, the Environmental Protection Agency (EPA) had not only the capacity but an enforceable legal duty to make this determination and could not refuse to regulate on the ground that the science was uncertain.

While not technically an environmental assessment decision, this was a judicial review of the EPA's decision not to regulate to protect the environment and showed a similarly innovative approach to the role of courts in public law cases involving scientific complexity.<sup>86</sup> The applicants, "a group of States, local governments, and private organizations" (mainly environmental and scientific) (p. 1446) were seeking a judgment that the EPA had a legislative duty to regulate emissions of greenhouse gases (GHGs) from new cars if the agency was of the opinion that these emissions created a danger to human health and welfare.<sup>87</sup> The EPA had decided it did not have the authority to regulate greenhouse gases and, even if it did, it was preferable to leave combating climate change to other policy instruments rather than to regulation.<sup>88</sup>

The majority of the US Supreme Court, while maintaining a general attitude of institutional appropriateness and deference to expertise, did not blindly apply this approach to competing scientific and legal roles in judgment. According to the majority, regulators are the experts, but they cannot rely on scientific uncertainty to justify failing to act.<sup>89</sup> Although the courts would not make the scientific decision for them, the regulators had a legal duty to come to an opinion as to whether greenhouse gas emissions from cars was contributing to global warming or not, and if their opinion was that these gases were causing climate change, they had an enforceable duty to regulate these emissions from new cars.<sup>90</sup>

In terms of finding a litigable injury in order to ground their ruling that the applicants did have standing, the majority set out the science of climate change,

83. See the decision by Fisheries and Oceans Canada in case 05-07-16237 (6 June 2008), <[http://www.ceaa.gc.ca/050/Viewer\\_e.cfm?CEAR\\_ID=16237&ForceDecision=Y](http://www.ceaa.gc.ca/050/Viewer_e.cfm?CEAR_ID=16237&ForceDecision=Y)>.

84. Gabriel Zarate, "Kearl Gets Fed Go-Ahead," (11 June 2008) *Slave River Journal*, available at <<http://www.ecojustice.ca/media-centre/press-clips/kearl-gets-fed-go-ahead/>>.

85. *Massachusetts v EPA*, *supra* note 73.

86. *Massachusetts v EPA*, *supra* note 73.

87. *Massachusetts v EPA*, *supra* note 73 at p. 1447.

88. *Massachusetts v EPA*, *supra* note 73 at p. 1450-51.

89. *Massachusetts v EPA*, *supra* note 73 at p. 1463.

90. Technically this was a petition for rule-making by the applicant States seeking to force the federal environment agency to regulate the emissions of new cars. The EPA refused to pass regulations on the grounds that it lacked jurisdiction to do so, and even if it had such jurisdiction, it was unwise to regulate piecemeal when climate change required a comprehensive federal plan; further, the EPA argued, even if failure to regulate contributed to climate change, it was such a tiny part of the cause of this problem and any relief in this case would help so little that the agency should not be sued in federal court. *Massachusetts v EPA*, *supra* note 73 at p. 1450-51.

and perhaps most importantly traced the progress of scientific understanding of this complex issue.<sup>91</sup> It also relied on the fact that the international expert panel of the Intergovernmental Panel on Climate Change (IPCC),<sup>92</sup> as well as the report commissioned from the National Research Council (NRC)<sup>93</sup> by the federal government itself, concluded that GHGs were contributing to global warming, although the EPA relied heavily on the conclusion of the NRC report that “a causal link [...] ‘cannot be unequivocally established.’”<sup>94</sup> However, the majority of the Court held that “[t]he harms associated with climate change are serious and well-recognized” and that a consensus of scientific expertise existed on this issue.<sup>95</sup> While the majority of the US Supreme Court was not prepared to make the scientific decision itself, it was also not prepared to defer to the EPA to the extent of allowing it to use scientific uncertainty as an excuse to fail to exercise the role of scientific judgment assigned to it:

Although we have neither the expertise nor the authority to evaluate these policy judgments [relied on by EPA to justify its failure to regulate,] it is evident they have nothing to do with whether greenhouse gas emissions contribute to climate change. Still less do they amount to a reasoned justification for declining to form a scientific judgment. [...] Nor can EPA avoid its statutory obligation by noting the uncertainty surrounding various features of climate change and concluding that it would therefore be better not to regulate at this time. [...] If the scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment as to whether greenhouse gases contribute to global warming, EPA must say so. That EPA would prefer not to regulate greenhouse gases because of some residual uncertainty [...] is irrelevant. The statutory question is whether sufficient information exists to make an endangerment finding. In short, EPA has offered no reasoned explanation for its refusal to decide whether greenhouse gases cause or contribute to climate change. Its action was therefore “arbitrary, capricious, . . . or otherwise not in accordance with law.”<sup>96</sup>

The majority of the US Supreme Court therefore emphasized the importance of science, its evolving nature, and the importance of consensus and of uncertainty. In both *Pembina Institute* and *Massachusetts v EPA*, the courts deferred to scientific expertise without capitulating their role of legal judgment in environmental disputes. The judges recognized they lacked scientific expertise but demanded that experts enunciate their expert knowledge so that courts can oversee this and ensure that political regulators are basing decisions on science and reasonable interpretations of science. This, in my view, is a preferable approach to scientific issues in environmental cases and a preferable judicial role to allow people affected by science and governmental policy in relation to the environment to have a chance at justice.

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91. *Massachusetts v EPA*, *supra* note 73 at p. 1447-1450.

92. *Massachusetts v EPA*, *supra* note 73 at pp. 1448-1449.

93. *Massachusetts v EPA*, *supra* note 73 at pp. 1449-1450.

94. *Massachusetts v EPA*, *supra* note 73 at p. 1451.

95. *Massachusetts v EPA*, *supra* note 73 at pp. 1455-1456.

96. *Massachusetts v EPA*, *supra* note 73 at p. 1463 (3 dots in original).

But is this approach sustainable in the private law context of toxic tort litigation?

### 3.2. *The Private Law Context: Toxic Tort Litigation*

Environmental tort litigation is a very different type of judicial exercise than judicial review. In tort law, the goals of the court are primarily to determine liability and provide compensation as between two parties.

In making [...] individualistic causation judgments, tort law has often recognized that it is doing more than just ascertaining scientific “truth.” It is making policy judgments about which party should bear the responsibility for causal uncertainty, and which party is in the best position to learn more about and absorb or spread the costs of the risks.<sup>97</sup>

The standard of proof in tort law is the balance of probabilities—whether something is more likely than not to be true—and thus certainty is not even stated to be the goal.

As Finley has argued, rulings on how judges should assess the admissibility of expert evidence can mask judicial policy preferences. She argues that the American rule allowing judges to screen out scientific evidence is not scientific or neutral:

It expresses a normative judgment that judges are to be trusted more than juries (and sometimes more than scientists) in areas where law intersects with science. It also urges caution on the tort system, expressing a preference to wait for the slow attainment of scientific certainty rather than to make a decision that may be ahead of scientific consensus, which often then prompts further scientific inquiry. In Justice Breyer’s view, a legal decision that a product is harmful when science is not yet certain presents greater policy problems than the alternative of allowing continued marketing and barring the courthouse door to ill people whose claims of causation may in fact later be widely embraced by the scientific community.<sup>98</sup>

I will focus on two environmental class actions in Canada because these are some of the highest profile and most interesting cases of environmental torts currently being litigated. In addition, they allow me to further my inquiry into whether Finley’s observations about access to justice and the social justice implications of toxic tort and product liability cases in the US are also occurring in Canada.

Class action rules in most Canadian jurisdictions require that the class obtain certification at a pre-trial motion, where the class must satisfy the court that five requirements are met: (a) a cause of action; (b) an identifiable class; (c) common issues; (d) proof that a class action is the “preferable procedure” for

97. Finley, “Guarding the Gate,” *supra* note 2 at p. 365.

98. Finley, “Guarding the Gate,” *supra* note 2 at p. 345.

resolving the common issues; and (e) a representative plaintiff.<sup>99</sup> The objectives of class actions have been held by the Supreme Court to be threefold: (i) judicial economy; (ii) access to justice; and (iii) behaviour modification.<sup>100</sup> If certification is refused, the case can still be brought by individual plaintiffs or as a test case by a public interest group.

Just as Finley indicates that using the *Daubert* novel scientific evidence admissibility rules to strike out the evidence of plaintiffs at the summary judgment stage in these cases has the effect, and perhaps even the intention, of altering the substantive law, so too does rejecting class actions at the certification stage effectively mean shutting down the tort law route. Where the causes of harm stem from actions by the government or parties permitted to pollute by the government, this has the effect of leaving everything to the regulatory realm.<sup>101</sup> In complex environmental cases, the scientific decision-making often excludes those affected, or leaves it to the government's discretion to decide contrary to public concerns. As Lynda Collins has pointed out,

tort has a critical role to play in environmental protection for at least two reasons. First, [...] statutory environmental law sometimes proves inadequate. Whether because of political pressure, mistake or inertia, environmental regulators sometimes simply fail to prevent or remedy significant environmental problems. [...] Second, even where a strong regulatory regime exists, tort's unique characteristics enable it to supplement, and in some cases even outperform, statutory environmental law.<sup>102</sup>

If in public law cases, as we have seen, courts often defer to scientific expertise, shutting down the alternative approach of suing in tort law means those affected are excluded from any access to justice at three different levels, and left with no recourse. It is to examples of this kind of problem that we now turn.

### 3.2.1. A Highly Deferential Approach: *Hoffman v Monsanto*

In *Hoffman v Monsanto*,<sup>103</sup> a group of Saskatchewan organic canola farmers tried to sue the manufacturers of GM canola for harm to their crops and land and for loss of international organic food markets when GM seeds contaminated their crops. Both the motions judge and the Saskatchewan Court of Appeal refused to certify this case, decisions that largely turned on scientific issues.

The motions judge seemed very strongly influenced by the government's two decision documents, which stated that GM canola "is considered substantially equivalent to canola currently approved as livestock feed. Unconfined release

99. *Class Proceedings Act 1992*, S.O. 1992, c. 6 <<http://www.canlii.org/en/on/laws/stat/so-1992-c-6/latest/>>. See also *Hollick v Metropolitan Toronto (Municipality)*, 2001 SCC 68, <<http://scc.lexum.umontreal.ca/en/2001/2001scc68/2001scc68.pdf>>, 2001:2 *Supreme Court Reporter* 158, at para. 7.

100. *Hollick*, *supra* note 99 at para. 27.

101. McLeod-Kilmurray, "Hoffman," *supra* note 25.

102. Lynda M Collins, "Strange Bedfellows? The Precautionary Principle and Toxic Tort: A Tort Paradigm for the 21st Century," (2005) 35:6 *Environmental Law Reporter* 10361–10372, <[http://www.commonlaw.uottawa.ca/index.php?option=com\\_docman&task=doc\\_download&gid=1255%20lynda%20collins%20strange%20bedfellows%20precautionary%20principle](http://www.commonlaw.uottawa.ca/index.php?option=com_docman&task=doc_download&gid=1255%20lynda%20collins%20strange%20bedfellows%20precautionary%20principle)> at p. 10362.

103. *Hoffman*, *supra* note 54.

into the environment [...] is therefore considered safe.”<sup>104</sup> However, the motions judge did not question the purpose, nature, or rigour of this scientific judgment. The government decision was limited to a finding that there was no proof that GM seeds are dangerous to humans, not that there exists proof that they are safe. In fact, there is well-documented uncertainty within the scientific community and in public opinion as to the safety of these seeds.<sup>105</sup> However, the motions judge’s deference to the government’s science, which itself is heavily based on the scientific evidence of industry applicants for permits to release GM seeds, coloured her entire analysis. She held that, apart from nuisance, none of the private law causes of action had a chance of succeeding at trial.

The importance of this case for our purposes is that the motions judge further reinforced the message in previous environmental class actions, such as *Hollick*<sup>106</sup> and *Pearson*,<sup>107</sup> that private law causes of action are powerless tools in attempting to battle environmental harm.<sup>108</sup> According to these legal decisions, we can and should trust the government to regulate, whether this is regulation of landfills, as in *Hollick*; industrial polluters, as in *Pearson*; or food safety, as in *Hoffman*. This is despite the fact that in all of these contexts, political and economic interests weigh heavily against the likelihood that political challenges to the current legal rules are likely to succeed.

Yet the legal judgment in *Hoffman* is worse than deference to science and to political priorities. It did not say, as the court did in *Hollick*, that this issue of legal liability for GM drift would be better litigated by means of judicial review of the regulatory decision to permit unconfined release, and that this was the justification for *refraining* from providing a detailed legal analysis of the application of tort law. Instead, in *Hoffman* the motions judge purported to exercise its role as judge of tort liability, but at the pre-trial motion stage, without a full record before it. As a result, it shut down this alternative avenue of toxic tort litigation. It did so mainly on the basis of deference to purported scientific expertise in the regulatory system, without actually inquiring into the adequacy of that system or the scope and purpose of its evaluation of the seeds. For example, the motions judge did not determine whether the government process included the question of legal liability and compensation, as opposed to mere “substantial equivalence” of the seeds to non-GM canola.

A contrasting approach was taken in the factually similar American case, *Geertson Farms v Johans*.<sup>109</sup> The Animal and Plant Health Inspection Service (APHIS) of the Department of Agriculture granted a permit allowing the unconfined release of GM alfalfa, on the basis of its “finding of no significant impact” (FONSI), which meant that a full Environmental Impact Statement was not required. Justice Breyer of the United States District Court for the Northern

104. *Hoffman* (SKQB), *supra* note 54 at para. 13.

105. See the articles on *Hoffman v Monsanto* in the special edition of the *Bulletin of Science, Technology & Society*, (2007) 27:3 *Bulletin of Science, Technology & Society*.

106. *Hollick*, *supra* note 98.

107. *Pearson v Inco Ltd.* (ON Sup Ct J, 2001), 42 *Canadian Environmental Law Reporter, new series* 273 (ON CA, 2005).

108. See Heather McLeod-Kilmurray, “*Hollick* and Environmental Class Actions: Putting the Substance into Class Action Procedure,” (2002-03) 34:2 *Ottawa Law Review* 263–306; see also McLeod-Kilmurray, “*Hoffman*,” *supra* note 25.

109. *Geertson Farms v Johans* (USA N Dist CA, 2007), <[http://www.cand.uscourts.gov/cand/judges.nsf/61ffe74f99516d088256d480060b72d/05528e50cb9a1c78825728200027954/\\$FILE/6-1075%20Geertson.pdf](http://www.cand.uscourts.gov/cand/judges.nsf/61ffe74f99516d088256d480060b72d/05528e50cb9a1c78825728200027954/$FILE/6-1075%20Geertson.pdf)>, 37 *Environmental Law Reporter* 2007 at p. 18.

District of California held that this decision to allow unconfined release failed the judicial review test of “arbitrary and capricious.” He issued an injunction to stop the sale of these seeds until a better EA was done and ordered disclosure of the location of all existing GM alfalfa already being grown so that non-GM farmers could attempt to protect themselves.<sup>110</sup>

This was another judicial review of an environmental assessment case, rather than a torts case, so the purposes and priorities of that legal context as outlined in Part 3.1 may have changed the court’s approach somewhat.<sup>111</sup> However, the salient point is that in *Hoffman* the judge was highly deferential to the scientific assessment of the dangers of GM foods without inquiring into the process or purpose of assessing these seeds under the Canadian regulatory regime. In *Geertson*, while the judge recognized the scientific expertise of the regulator and the discretionary nature of its powers, Justice Breyer did not abdicate his role of legal judgment but instead inquired closely into the expert scientific opinion to determine its reasonableness under law. He held:

APHIS’s reasons for concluding that the potential for the transmission of the genetically engineered gene is not significant are not “convincing” and do not demonstrate the “hard look” that NEPA requires. [...] APHIS did not conclude that gene transmission would not occur; indeed, an internal APHIS email acknowledges that “[i]t may be hard to guarantee that seeds or sprouts are GE free.” [...] Instead, it in effect concluded that whatever the likelihood of gene transmission, such impact is not significant because it is the organic and conventional farmers’ responsibility to ensure that such contamination does not occur. It rested its “no significant impact” decision on this conclusion even though it made no inquiry into whether those farmers who do not want to grow genetically engineered alfalfa can, in fact, protect their crops from contamination, especially given the high geographic concentration of seed farms and the fact that alfalfa is pollinated by bees that can travel more than two miles.<sup>112</sup>

He also added the following clarification:

The Court cautions that it is not ruling that Roundup Ready alfalfa is harmful to consumers or livestock. Rather, the significant impact that requires the preparation of an EIS is the possibility that the deregulation of Roundup Ready alfalfa will degrade the human environment by eliminating a farmer’s choice to grow non-genetically engineered alfalfa and a consumer’s choice to consume such food.<sup>113</sup>

It is in fact the very creation of uncertainty that led the court to require better scientific and regulatory judgment than findings that merely amounted

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110. Order for permanent injunction in *Geertson Farms v Johanss* (USA N Dist CA, 2007), <[http://www.aphis.usda.gov/brs/pdf/Alfalfa\\_Ruling\\_20070503.pdf](http://www.aphis.usda.gov/brs/pdf/Alfalfa_Ruling_20070503.pdf)>

111. It is notable that one of the farmers’ claims in *Hoffman* was that an EA should have been done, but the bulk of the reasons dealt with the common law claims. *Hoffman*, *supra* note 54.

112. *Geertson Farms*, *supra* note 109 (references omitted).

113. *Geertson Farms*, *supra* note 109.

to saying “it probably won’t happen, and if it does, the farmers can protect themselves and more pesticides can be used.” This more probing approach is also revealed in the recent Canadian decision, *Ring v Canada (Attorney General)*.<sup>114</sup>

### 3.2.2. A Better Approach: *Ring v Canada (Attorney General)*

*Ring v Canada (Attorney General)* involved a class action brought before the Newfoundland and Labrador Supreme Court Trial Division on behalf of “all individuals who were at [Canadian Forces Base] Gagetown between 1956 and the present and who claim[ed] they were exposed to dangerous levels of dioxin or HCB while on the Base” as a result of the use of military herbicides such as Agent Orange in the 1960s and commercial pesticides over several decades.<sup>115</sup>

The legally innovative remedy sought by the class was “the cost of medical testing to determine whether or not they have absorbed a dangerous dose of chemicals into their systems as a result of this exposure.”<sup>116</sup> This case is remarkable because it takes a very different approach to scientific and medical complexity and the admissibility of evidence. What is even more interesting is the court’s receptivity to novel *legal* arguments where scientific realities make traditional legal approaches problematic.

Justice Barry did not shy away from the scientific uncertainty in this case. Yet he explicitly demonstrated his understanding that proof in legal and scientific contexts require different levels of certainty. Further, he was very willing to allow the plaintiffs to argue that the legal approach to these kinds of problems should be changed in order to overcome the insurmountable obstacles that the science and the legal precedents created:

Dr. Mandel’s [the defendant’s expert epidemiologist] affidavit states [that] “[d]rawing a conclusion regarding general causation between a collective *group* of exposures and a *group* of diseases is not an acceptable approach in epidemiological research.” The Plaintiffs are entitled, however, to try to make the case that it is an acceptable approach in negligence law. While the approach may not “lead to a meaningful scientific answer with respect to a specific dose-response relationship,” it may lead to a meaningful legal answer regarding the creation of unreasonable risks for the general public. Cross-examination of the Third Parties’ experts at trial will help to determine whether Dr. Mandel and other experts have focused on what they need for medical certainty rather than on what the law requires for proof in a civil case, namely proof on a balance of probabilities.<sup>117</sup>

This may be an indication of another indirect effect of judicial responses to scientific uncertainty that is difficult to document. Since there has been such a strong indication from the courts in environmental cases that causation of health problems is virtually impossible to prove collectively,<sup>118</sup> parties are discouraged

114. *Ring v Canada (Attorney General)*, 2007 NLTD 146, <<http://www.canlii.org/en/nl/nlscstd/doc/2007/2007nld146/2007nld146.pdf>>, 2007:268 Newfoundland & Prince Edward Island Reports 204.

115. *Ring*, *supra* note 114 at para. 133.

116. *Ring*, *supra* note 114 at para. 127.

117. *Ring*, *supra* note 114 at para. 151 (emphasis in original).

118. *Pearson*, *supra* note 107; *Hollick*, *supra* note 99.

from bringing these claims, which sends the clear message to polluters that this kind of injury is immune to challenge. It also denies the opportunity for private law to evolve in response to environmental problems.

Barry J also distinguished precedent, reasoning that

the Plaintiffs wish to make a case that the advancing state of scientific knowledge has now arrived at the stage where they will be able to establish that the spraying of certain herbicides in a particular manner created an unreasonable risk to the health of individuals frequenting the area sprayed. They need the opportunity of a trial to properly present their evidence and expert opinions on this point.<sup>119</sup>

He was not only receptive to moving away from precedent by recognizing evolution in science, but also held that the law should evolve in response to these new scientific facts: “The novelty of the cause of action should not prevent the Plaintiffs from having their day in court.”<sup>120</sup>

In terms of access to justice, the court was very much aware that denying certification was as good as denying the possibility of justice, particularly in cases of scientific complexity:

proving their claims will be a complex and expensive process and the plaintiffs should be entitled to the benefits of a class action to ensure their access to justice by a pooling of resources where individual plaintiffs probably would not be able to afford to proceed.<sup>121</sup>

Barry J also seems to reverse the burden of proof and creates a presumption in favour of certification:

The experts’ affidavits filed to date do not persuade me that establishing certain areas at CFB Gagetown had sufficient chemical residue to create an unusual danger of exposure to dioxin and HCB will not assist the court in moving along the toxicological chain of causation.<sup>122</sup>

This precautionary presumption allows the law to respond to, and engage with, scientific uncertainty.

Finally, Justice Barry’s decision differs from precedent in that he is not willing to abdicate his role of legal judgment to the regulatory system:

I am not persuaded that the existence of a regulatory scheme under the *Pest Control Products Act*[...] adequately meets the goal of behaviour modification. This goal would be better promoted by certification in the present case.<sup>123</sup>

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119. *Ring*, *supra* note 114 at para. 98.

120. *Ring*, *supra* note 114 at para. 152.

121. *Ring*, *supra* note 114 at para. 148.

122. *Ring*, *supra* note 114 at para. 153.

123. *Ring*, *supra* note 114 at para. 159.

Justice Barry took the step of actively deciding to allow the law to recognize new scientific evidence, and to allow the law to evolve to meet these new realities. Once again, this is respecting science and the judge's own limitations in terms of scientific expertise, while doing his utmost to exercise his legal judgment in a way that makes access to justice a real possibility.

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#### 4. CONCLUSION

BOTH SCIENCE AND LAW HAVE AS THEIR PURPOSE THE RESOLUTION of problems facing society, but they achieve this in different ways. Legal judgments should be understood as what they are—not permanent findings of certainty, but the best decision in a given case at a particular moment in time. They should therefore not impede the scientific research agenda, particularly in a way that has negative effects on the more vulnerable groups in society. The law should remain flexible and not tied to legal precedent or the need for the pretence of objectivity and finality when these are not warranted. Scientific expertise and uncertainty should not be an excuse for courts to abdicate their legal duties, and should not be used as tools to hide policy preferences or to deny justice to those most seriously affected by environmental harm. As the case studies have shown, there are alternatives. These cases reveal a kind of judicial deference that blends judicial respect for scientific judgment with a strong commitment to ensuring that legal judgment does not preclude access to justice nor the real possibility of effective substantive justice. It is hoped that this approach to legal judgment in environmental cases is the way of the future.