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Expert Evidence in Environmental Claims – Lessons from the South

By Tamara Farber, Partner, Certified Specialist in Environmental Law and David Pooler, Student-at–law, MILLER THOMSON LLP - Presented April 6, 2009 - - Ontario Bar Association: Putting the Puzzle Together: An exploration of Emerging and Critical Issue in Environmental Civil Litigation

1. Introduction

Witnesses testify to facts. As a general rule of exclusion, they are not allowed to give any opinion about those facts. Expert evidence is permitted only as an exception to this rule. Courts recognize that an average person, even if given correct information, may not possess the necessary knowledge to assess its significance or draw the correct inferences in a particular context.[1] The expert's function is to provide a ready-made inference where the judge and jury, unassisted, are unable to form their own conclusions.[2]

The increasingly frequent use of expert witnesses has led to debate about suitable controls on their participation in the litigation process. The following paper provides an overview of admissibility issues in expert testimony in Canadian law and examines the relevance of United States case law on environmental claims involving these issues. Issues often arise in the context of novel scientific evidence because the court is not able to draw on past admissibility rulings to determine if the expert's opinion should be admissible, and if admitted, what weight to attach to it.

The leading Canadian case on expert evidence is *R. v. Mohan*.[3] The Supreme Court of Canada articulated and applied a four part test to determine the admissibility of expert evidence. In addition to the *Mohan* factors, Canadian courts have adopted an additional four factors outlined in the leading American precedent, the *Daubert* decision, for use in determining the admissibility of novel science. While Canadian courts have not yet had to address the issue of novel science in an environmental context, a handful of civil and quasi-criminal environmental claims have been litigated in the United States where admissibility of expert evidence was raised. For these reasons, American environmental litigation involving novel science may be of particular interest to Canadian environmental litigators.

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[1] *Chan v. Erin Mills Town Centre Corporation* (2005) CanLII 43678 (ON S.C.) at para 20 ["*Chan*"].
[2] *R. v. Abbey*, 1982 CanLII 25 (S.C.C.), [1982] 2 S.C.R. 24 at 42.
[3] [1994] 2 S.C.R. 9, 114 D.L.R. (4th) 419 [*Mohan*].

This paper will provide an overview of the *Daubert* decision, and examine the role the *Daubert* factors play in assessing novel science in Canadian law. We review some more recent American case law involving novel science in environmental claims and see whether these rulings provide guidance to judges in making future determinations on admissibility issues. Where counsel seeks to admit such evidence, they should be cognizant of the evidentiary issues at the earliest stages of the retainer to ensure all factors that might be considered are adequately addressed.

2. Background: Issues with Expert Evidence

In the seminal Canadian case on the issue of the admissibility of expert evidence, *R. v. Mohan,*[4] Sopinka, J. articulated one the Court's primary concerns:

> Dressed up in scientific language which the jury does not easily understand and submitted through a witness of impressive antecedents, this evidence is apt to be accepted by the jury as being virtually infallible and as having more weight than it deserves.[5]

The concerns of improperly admitting such evidence are plentiful: preventing a trial from becoming a "medical or scientific convention with an exchange of highly speculative points of view"[6] or a "battle of the experts"[7]; the risk that the expert's point of view will take hold in a court of law regardless of whether he or she is actually correct[8] - this has perhaps less to do with admissibility and more to do with the nature of cross-examination, which can discredit experts opinions for reasons having little or nothing to do with scientific validity and more to do with interpersonal skills, or the lack thereof; the potential admission of misleading or worthless information through experts - so called "junk science."

Binnie, J. addressed whether courts are doing a proper job of resolving disputes in which an appreciation of technical matters is necessary.[9] He notes that, historically, courts could judge science by seeking to ascertain the prevailing consensus in the scientific community.[10] This

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[4] *Mohan*, *supra* note 3.

[5] *Mohan*, *supra* note 3 at para 19.

[6] *R. v. J.E.T.*, [1994] O.J. No. 3067 (Ct. Jus. Gen. Div.) at para. 77.

[7] Paciocco, David M., and Lee Stuesser. *The Law of Evidence* (Concord, Ont.: Irwin Law, 2008) ["*Paciocco*"]

[8] The Honourable Mr. Justice W. Ian C. Binnie, *Science in the Courtroom: The Mouse that Roared* (Autumn 2008) 27 Advocates' Soc. No. 2, 11-23 at para 13. ["*Binnie*"]

[9] *Binnie*, *ibid.*

[10] *Binnie*, *ibid.* at para 21.

approach, he notes, was rejected in the United States in 1993 with the *Daubert* case. Judges are now increasingly called upon to evaluate scientific evidence in situations where no consensus exists on the validity of the underlying science. The real issue, he notes, "is not what the experts say, but whether they have established a scientific basis for their testimony."[11] So how do Canadian and American courts deal with the admissibility of this type of evidence?

3. Novel Science in the US and Canada:

A. Defining Novel Science:

"Novel Science" has yet to be authoritatively defined. Justice Bastarache suggested in a dissenting opinion in *R. v. Trochym* that "[a] scientific technique or knowledge will be considered novel in two situations - when it is new, or when the application of recognized scientific knowledge or technique is new."[12] In *Chan v. Erin Mills Town Centre Corporation*, Lax, J. succinctly states:[13]

> Novel science […] in general […] is science producing evidence or bodies or knowledge that are new, untested, and that deviate from accepted standards or lack any standards.

In *The Law of Evidence*, Paciocco and Stuesser note that defining novel science as "new" can be problematic; does this imply new to the court, or new to the scientific community. They argue the relevant question for consideration should be the novelty of *admission*:

> […] asking whether the admission of the evidence in question is novel performs a pragmatic function. As the *Trochym* majority observed, where admissibility is well established, judges can rely on past practice to assume that the technique or science is *reliable* enough to warrant admission.[14]

"Novel science" may therefore be defined as encompassing situations in which courts have not established a practice of admitting a type of science, or where an established practice is being put

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[11] *Binnie, ibid.*

[12] *R. v. Trochym* (2007), 43 C.R. (6th) 217 at para 133 (S.C.C.), cited in *Paciocco*, supra note 7.

[13] *Chan, supra* note 1 at para 23.

[14] *Paciocco, supra* note 7 at p.207 [*Emphasis added*]. (The authors go on to note an important exception. "Canadian courts have, on occasion, established a practice of admitting kinds of expert evidence that have subsequently been shown to be unreliable. Examples include "child abuse accommodating syndrome" and "recovered memory syndrome" and, although not strictly speaking an expert evidence situation, with hypnotically induced evidence. On hypnotic evidence see *Trochym, supra* note 12 at para 32.)

to a novel use, or where there is a realistic basis for challenging an underlying scientific theory.[15] In these situations there is an increased risk that expert witnesses will present misleading information. As a result, Canadian courts have subjected novel science to "special scrutiny to determine whether it meets a basic threshold of reliability."[16]

B. U.S. Approach: The Daubert Decision

Historically, common-law courts determined the admissibility of scientific evidence by ascertaining whether consensus about the subject of the testimony existed in the scientific community. The *Frye* test established in the United States held that, to be admitted, testimony "must be sufficiently established to have gained general acceptance in the particular field in which it belongs.[17]

This general acceptance test was used for over seventy years before being unanimously rejected in the *Daubert* trilogy.[18] The "*Daubert* trilogy" refers to (a) *Daubert v. Merrell Dow Pharmaceuticals, Inc*.[19] and *Kuhmo Tire Co., Ltd. v. Carmichael*,[20] which establish the trial judge's role as gatekeeper of expert testimony and set forth the criteria to determine if expert evidence is admissible, and (b) *General Electric Co. v. Joiner*[21] which established the standard for appellate review of a trial court's ruling on the admissibility of expert evidence.[22]

In *Daubert*, the United States Court for the District of Columbia held that the general acceptance test was superseded by the Federal Rules of evidence. The Court held that nothing in the text of

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[15] *Paciocco*, *supra* note 7 at p.208

[16] *Mohan*, *supra* note 3.

[17] *Frye v. United States* 193 F. 1013 (D.C. Cir. 1923)

[18] Cited in Lee Hamel, Mark Thornhill and Benjamin Clark, *Application of Daubert in Environmental Criminal and Civil Cases* (Paper presented to the SEER Section meeting in Portland, Oregon, Fall 2002) ["*Application of Daubert*"].

[19] 509 U.S. 578 (1993) ["*Daubert*"]

[20] 526 U.S. 137 (1999) ["*Kuhmo*"] (In this case it was held that *Daubert*'s general holding – setting forth the trial judge's general gatekeeping obligation – applies not only to testimony based on scientific knowledge, but also to testimony based on technical and other specialized knowledge).

[21] 522 U.S. 136 (1997) ["*Joiner*"]

[22] *Application of Daubert*, *supra* note 18 at p.1.

Rule 702[23] requires general acceptance as an absolute prerequisite to admissibility.[24] The test for assessing admissibility requires a trial judge to determine "whether the expert is proposing to testify to (1) scientific knowledge that, (2) will assist the trier of fact to understand or determine a fact in issue."[25] The Court outlined four factors judges could consider in determining whether a theory or technique constituted *scientific knowledge*:[26]

> (1) whether the expert's theory and underlying methodology can be, or has been, tested;
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> (2) whether the technique or theory has been subjected to peer review and publication;
>
> (3) whether the technique or theory has a "known or potential rate of error"; and
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> (4) whether the technique or theory has been generally accepted in the scientific community.

The test is "a flexible one"[27] and "must be [based] solely on principles and methodology, not on the conclusions they generate."[28]

In essence, the Court held that in a case involving scientific evidence, "evidentiary reliability will be based on *scientific validity*."[29] Thus, scientific validity effectively replaced general acceptance. In determining admissibility, the issue is therefore whether the experts have established in the evidence a scientific basis for their testimony.[30] The analysis requires judges to take on a more active role as gatekeeper; essentially, it requires judges to comment on the validity of scientific theories, even when the judges themselves may have little scientific background or understanding of the relevant theories in any case. In theory, if the presentation

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[23] Citing from *Application of Daubert*, *supra* note 18 at p. 2. Federal Rule of Evidence 702 governs the admissibility of expert testimony. More specifically, Rule 702 provides "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill experience, training, or education, may testify thereto in the form of an opinion or otherwise." Fed R. Evid. 702.

[24] *Daubert*, *supra* note 19 at 589.

[25] Citing from *Application of Daubert*, *supra* note 18 at p. 2. Federal Rule of Evidence 104(a) governs preliminary questions of admissibility. More specifically, Rule 104(a) provides "Preliminary questions concerning qualification of a person to be a witness, the existence of privilege, or the admissibility of evidence shall be determined by the court . . . In making its determination it is not bound by the rules of evidence except those with respect to privileges." Fed R. Evid. 104(a).

[26] *Ibid.*

[27] *Daubert*, *supra* note 19 at 593-594.

[28] *Daubert*, *ibid.* at 594-95.

[29] Binnie, *supra* note 8 at para 22 [*emphasis added*].

[30] *Ibid.*.

of evidence cannot be demonstrated in such a way as to explain the methodology involved and the underlying validity of the opinion to the point where it is reasonably understood, the expert opinion should be inadmissible. In practice, however, the determination of that may not reasonably be made without a full examination of the issues in the trial. So should the court examine the opinion in detail at the admissibility stage and if so, is the examination essentially the complete underlying basis for the opinions presented? Is this not the factual assessment designated to the trier of fact (including jury) as opposed to the gatekeeper assessment of the judge? In judge alone cases, the question may make little practical difference to the outcome of the case and the curiosity of the court to hear the full evidence may win out. In jury cases, however, the danger readily presents itself to the original concern of Sopinka, J. Whether it is a test that judges understand or can implement remains to be seen in the analysis of cases below.

C. The Canadian Approach to Novel Science:

R. v. Mohan[31] is the leading case on the admissibility of expert evidence in Canada. In Mohan, the respondent, a practising paediatrician, was charged with four counts of sexual assault on four female patients between the ages of 13 and 16. His lawyer intended to call a psychiatrist who would testify that the perpetrator of the alleged offences could be part of a limited and unusual group of individuals and that the respondent did not possess the characteristics belonging to that group. The evidence was ruled inadmissible in a voir dire. The Court of Appeal disagreed and ordered a new trial. The Supreme Court of Canada allowed the appeal and excluded the expert evidence. Regarding the testimony of the expert the Court stated:

> There was nothing to indicate any general acceptance of his theory. Moreover, there was not material in the record to support a finding that the profile of a pedophile or psychopath has been standardized to the extent that it could be said that it matched the supposed profile of the offender depicted in the charges. The expert's group profiles were not seen as sufficiently reliable to be considered helpful. In the absence of these indicia of reliability, it cannot be said that the evidence would be necessary […][32]

In coming to this conclusion the Court also established the four criteria that must be met in order for expert evidence to be admissible:[33]

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[31] *Mohan*, *supra* note 3.

[32] *Ibid.*

[33] *Ibid.* at para 17.

a) relevance;

b) necessity is assisting the trier of fact;

c) the absence of any exclusionary rule; and

d) a property qualified expert

The following section will consider the application of each criterion to a determination of the admissibility of "novel science."[34]

a. Relevance and the threshold of reliability

A two prong test must be applied before decisions on admissibility can be made. 1) Does the evidence advance the proposition being made? 2) If yes, does the probative value of the evidence outweigh its prejudicial effect? When examining potential prejudicial effect, the court will consider factors such as the undue consumption of time, the degree to which the evidence will confuse and/or mislead the jury or impair the jury's objectivity. Where the prejudicial effect of the evidence outweighs its probative value, the evidence is excluded. This is a key consideration, especially in criminal cases.[35]

While not an enumerated category of admissibility, reliability is a crucial consideration in determinations of relevance. Decisions subsequent to *Mohan* have underlined that reliability "is clearly an essential requirement for the admission of expert evidence."[36]

The reliability threshold depends on the nature of the evidence being presented. Generally, where the opinion being presented is scientific, the courts will consider the four factors set out in *Daubert*.[37]

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[34] Todd L. Archibald and Heather L. Davies, *Law, Science and Advocacy: Moving Towards a Better Understanding of Expert Scientific Evidence in the Courtroom*, published in Todd Archibald, Randall Scott Echilin, *Annual Review of Civil Litigation* (Toronto: Caswell, 2006) at 1-31 ["*Archibald*"]

[35] Sopinka, Lederman and Bryant, *The Law of Evidence in Canada*, 2d Ed. (Toronto and Vancouver: Butterworths, 1999) at 34 [*Sopinka et al.*]

[36] *R. v. F. (D.S.)* (1999), 169 D.L.R. (4th) 639 (C.A.) at para. 45 [F.(D.S.)].

[37] *Paciocco*, *supra* note 7 at p.200

Where "novel science" is concerned, the court must undertake a "special scrutiny" of the evidence in order to determine whether the basic threshold of reliability is met. In *Mohan* the Court stated:

> …it appears from the foregoing that expert evidence which advances novel scientific theory or technique is subjected to *special scrutiny* to determine whether it meets a basic threshold of reliability.[38]

R. v. Terceira[39] held that this statement did not create a novel standard of proof, rather trial judges must determine, on a balance of probabilities, whether novel evidence meets the "threshold of reliability." *Terceira* involved the admission of DNA evidence and hypnotically refreshed testimony. At trial it was established that the victim was sexually assaulted and died from asphyxiation. Forensic evidence was admitted and linked Terceira to the murder. On appeal the court held that each form of evidence was admissible. DNA evidence was not to be accorded a special status or treated any differently from other forms of circumstantial evidence.

> DNA evidence reflected a scientific theory or technique that had gained general acceptance in the scientific community. Questions about the application of the methodology were questions of weight to be determined by the jury. Probability statistics were admissible….
>
> Hypnotically refreshed testimony was admissible. The effect of hypnosis on the witness's memory went to the weight given to the evidence by the jury. The defence cross-examined her and the judge cautioned the jury about it. [emphasis added]

Archibald, J. notes that *Terceira* clarifies:

> It is the mythology or theory itself that comes under scrutiny in assessing reliability, not the propriety of the application of the methodology to the particular case; the latter is a question of weight, not admissibility, and is to be determined by the ultimate trier of fact.[40]

The use of the "general acceptance" language in *Terceira* is curious in comparison to the US cases, but may be simply suggesting that general acceptance is an indicator of scientific validity but is not the only indicator.

In *R. v. L.J.(J.),* the Supreme Court of Canada held that novel science is subject to special scrutiny and explicitly accepted the four *Daubert* factors as "ones that could be helpful in

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[38] *Mohan*, *supra* note 3 at 25.

[39] (1998), 38 O.R. (3d) 174 (C.A.), leave to appeal allowed (1998), 127 C.C.C. (3d) vi (note), affirmed [1999] 3 S.C.R. 866 [*Terceira*]

[40] *Archibald*, *supra* note 34 at p.11.

evaluating the soundness of novel science."[41] In this case, the accused was charged with a series of sexual assaults on young men. He tendered evidence of a psychiatrist to establish that in all probability a serious sexual deviant had inflicted the abuse and that no such deviant personality traits were disclosed by the accused in various tests including penil plethysmography. The Supreme Court found that the "profile" argued in the case did not meet the *Mohan* criteria.

> [T]he issue whether the profile is sufficient depends on the expert's ability to identify and describe with workable precision what exactly distinguishes the distinctive or deviant perpetrator from other people and on what basis the accused can be excluded. The expert evidence tendered in this case was unsatisfactory on both points. The definition of the "distinctive" group of individuals with the propensity to commit the "distinctive crime" was vague… Furthermore, the witness did not satisfy the trial judge that the underlying principles and methodology of the test administered to the accused were reliable and, importantly, applicable. [emphasis added]

As a result, expert testimony was ruled inadmissible and the conviction of the accused was upheld.

This seems to better echo the analysis in the *Daubert* cases, focusing on scientific validity but adds, at least on the facts of the case, an element of precision or distinctiveness – or what may be described generally as reliability. It is important for counsel to understand the underlying reasoning in these cases to avoid an inadvertent ruling on admissibility due to lack of a thorough canvassing of the science behind the opinion, the precise methodology in the analysis, the underlying principles that formed the basis of the opinion.

Lederman, J. notes that the application of the factors has continued to be vexing. As a result, a tendency has developed to focus instead on the necessity criterion.[42]

Despite the judicial emphasis on reliability in criminal cases, in judge alone civil cases reliability has rarely been a bar to admission. This is perhaps because many of the pitfalls associated with admitting novel evidence are avoided where a jury is not involved. In *Chan v. Erin Mills*, Lax J. observes:

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[41] [2000] 2 S.C.R. at para 33 [*J.-L.J.*]

[42] The Honourable Justice Sidney N. Lederman, "*Judges as Gatekeepers: The Admissibility of Scientific Evidence Based on Novel Theories*" originally published in Joost Bloom and Helene Dumon, eds. Science, Truth and Justice (Montreal: Les Editions Themis/Canadian Institute for the Administration of Justice, 2001) and updated in October 2002, at 11 [*Lederman*])

> …the metaphor of the judge as gatekeeper loses much of its symbolic force when it is the judge who is the trier of fact. That is not to say that a trial judge is excused from scrutinizing evidence as improperly admitted evidence can surely have an impact on a trial, but the likelihood of a judge being overwhelmed by the "mystic infallibility" of the evidence and misusing the evidence to distort the fact finding processes is far more remote.[43]

As Justice Binnie noted and as Justice Lederman suggested, a pre-trial motion to address admissibility issues in expert evidence could assist the courts to resolve the process issues that may complicate the substantive analysis issues.[44]

b. Necessity:

Mohan defined necessity in the context of expert evidence as evidence that is "necessary in the sense that it would provide information which is outside the experience and knowledge of the judge or jury."[45] However, the standard for admission is not simply whether the information is helpful. Rather, "[i]t must provide the trier of fact with the ability to draw inferences that *could not* be made without the expert's assistance."[46] With respect to "novel science", the opinion evidence must be "*essential* in the sense that the trier of fact will be unable to come to a satisfactory conclusion without the assistance of the expert."[47]

In *R. v. K.* (A.),[48] the appellants were convicted of a number of sexual offences against children in their family. One issue was the admissibility of expert evidence called by the Crown to explain the complainant's delayed disclosure and other features of the complainant's behaviour. The court held that the prejudicial effect of the evidence far exceeded its probative value, and that as a result, it should not have been admitted. The Court of Appeal highlighted a number of factors that should be considered in determining the admissibility of expert evidence.

> a) whether the expert opinion will enable the trier of fact to appreciate the technicalities of a matter in issue;
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> b) whether the evidence will provide information that is likely to be outside the experiences of the trier of fact; and

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[43] *Chan, supra* note 1 at para 31.

[44] Binnie, *supra* note 8 at Note 41 therein.

[45] *Mohan, supra* note 3 at 23.

[46] *Archibald, supra* note 40 at p.13

[47] *Mohan, supra* note 3.

[48] *R. v. K.(A.)* (1999), [1999] O.J. No. 3280, 45 O.R. (3d) 641 (C.A.), affirmed (2000), 135 O.A.C. 199 (note) [*A.K.*].

> c) if the trier or fact is unlikely to form a correct judgment without the assistance of the expert evidence.[49]

Justice Findlay noted that:

> [..] the maintenance of a high hurdle with respect to the necessity criterion is critical to ensure that a jury does not abdicate its fact-finding role to an impressive and convincing expert analysis on a topic that is within its own common sense in the first place.[50]

c. Absence of an Exclusionary Rule:

Expert evidence is subject to the same exclusionary rules as other evidence. A review of these rules is beyond the scope of this paper.[51]

d. Properly Qualified Expert:

Peer review is often not available (at all or sufficiently) for expert evidence which is novel. As a result, the qualifications of the expert take on a heightened significance.[52] Nevertheless, there may be situations in which a scientific theory has yet to evolve to a point where any expert testimony is admissible.

In *R. v. Olscamp,*[53] the proposed expert sought to introduce evidence that the child complainant displayed symptoms of a child who had been sexually abused. The expert could not offer evidence to support the reliability of his clinical experiences, and no valid profile of sexually abused children existed. As a result, it was held that "[b]ased on the present state of the art, the evidence could not be offered by any expert in the field."[54] While this case illustrates the issue of reliability, it highlights the issue from a qualifications perspective. In less obvious examples of reliability, the scope of the qualification of the expert becomes critically important – i.e. how the expert is classified at trial and the exact scope of expertise, may rule out the admission of certain aspects of expert testimony. If the expert is too narrowly qualified by counsel, she or he

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[49] *Lederman*, supra note 42 at 27.

[50] Mr. Justice Finlayson, *The Admissibility of Opinion Evidence: What should properly concern the trial judge as opposed to the trier of fact*, Paper prepared for the 1999 Fall Educational Seminar in Toronto at 6 and 7. cited in *Archibald, supra* note 40 at p.11.

[51] See Sopinka, Lederman and Bryant, *The Law of Evidence in Canada*, 2d Ed. (Toronto and Vancouver: Butterworths, 1999) at 34 [*Sopinkat et al*.] for a detailed review of exclusionary rules.

[52] *Lederman*, *supra* note 42 at 31

[53] *R. v. Olscamp* (1994), 95 C.C.C. (3d) 466 (Gen. Div.) [*Olscamp*].

[54] *Ibid* at 8.

may be unable to properly answer questions about areas that are outside of the qualified expertise.

Qualifications of experts can be a tricky game for opposing counsel, who has the choice to oppose the evidence in its entirety through a voir dire on qualifications, or attack the opinions through cross-examination once the expert is properly qualified. If the admission of evidence is really of critical importance, counsel may try to negate the reliability of the expert at the early qualification stage. If the expert is "qualified" to testify, counsel may still cross-examine to attempt to discredit the witness, but if a minimum level of expertise is established, usually through an analysis of the experience of the expert in the particular field, the expert will be qualified to proceed with the balance of his or her testimony. It is the odd case, in my experience, where the expert has not passed the qualification stage. In other cases where the qualification is challenged, scrutiny of the experience of the expert may only bolster the full depth of experience sitting in the witness chair.

4. The Application of "Novel Science" to Environmental Claims:

Canadian courts have yet to substantially consider "novel science" in the context of an environmental claim. However, in the United States, the *Daubert* factors have been considered in a handful of quasi-criminal and civil environmental actions.[55]

A. Environmental Criminal Cases:

In *U.S. v. Hansen*,[56] Christina Hansen, the owner and operator of an industrial plant known as LCP Chemicals Georgia ("LCP"), was charged by the Environmental Protection Agency (EPA) for numerous, substantive environmental law crimes. Ultimately, the District Court sentenced Hansen to 108 months of imprisonment and a fine of $20,000.[57]

On appeal, Hansen argued that the District Court erred in admitting the testimony of the government's expert witnesses. The expert evidence dealt with several issues, including the

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[55] The analysis and overview pertaining to cases in this section come directly from *Application of Daubert, supra,* note 18 at p. 4 -10.

[56] 262 F.3d 1217 (11th Cir. 2001) ["*Hansen*"].

[57] *Hansen, ibid.* at 1232.

effect of high levels of mercury on endangered species, and the plant employees' potential exposure to hazardous substances. In preparation for trial, the expert had reviewed numerous biological samples, conducted several interviews, and reviewed several documents. The week prior to trial, Hansen requested a *Daubert* hearing to exclude the proposed testimony. The motion was dismissed, albeit on a technicality of the failure of Hansen to introduce the evidence of the methodology used by the expert and therefore, there was no underlying methodology for the court to assess under the *Daubert* principles. At trial, Hansen failed to object or examine the expert at the qualification stage when the government moved to present him as a witness. Hansen did not object to the testimony either.

Citing the *Daubert* factors, the Court stated that scientific evidence is admissible if:

> 1) The expert is qualified to competently testify regarding the subject in issue; 2) the witness's methodology is deemed sufficiently reliable by the type of inquiry proposed in *Daubert*; and 3) the testimony assists the trier of fact in understanding the evidence.

With regards to the particular expert evidence in issue, the Court ruled:

> Hansen's motion for a *Daubert* hearing was neither addressed to the charges to which Teitelbaum [the expert] testified or his testimony in general, nor supported by the source, substance, or methodology of the challenged testimony. Hansen failed to object to either Teitelbaum's qualification as an expert or his testimony during trial. Teitelbaum's testimony was based on his review of biological samples, interview, and documents and assisted the trier of fact in understanding the potential injures that could result from the conditions at the plant. The district judge did not abuse his discretion by denying the motion or by admitting the testimony.[58]

The case is instructive for a look at what counsel did, did not or could have done in various procedural stages: the *Daubert* motion prior to trial, the qualification stage during trial before the expert actually provides the expert opinion and the actual presentation of opinion evidence. While the result may have been the same even with proper presentation of evidence on the motion or cross-examination at the trial, the question is one that should not have to be asked.

In contrast, in *United States v. Cunningham*,[59] the *Daubert* test was used successfully to challenge and exclude the admission of expert evidence. Nobel Cunningham and members of his family operated R&D Chemical Company, which manufactured a chrome removal compound. Its processes created a yellow hazardous waste sludge, which were stored in drums, and

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[58] *Hansen, ibid*. at 1232-33.

[59] 194 F.3d 1186 (11th Cir. 1999) ["*Cunningham*"].

physically located on Cunningham's farm. When the Ohio EPA found the drums, Cunningham began storing the drums elsewhere, including the parking lot of a company known as Rose Lab. Rose Lab did not have a permit to store, treat or dispose of hazardous waste. Cunningham was convicted, among other things, for illegally storing drums of hazardous material (including at Rose Lab).

On Appeal, Cunningham argued that the District Court erred by refusing to allow him to question Joe Stillwell, Rose Labs' plant manager. At the trial Cunningham's attorney called Joe Stillwell, and established that Stillwell possessed an undergraduate degree in chemistry and that Cunningham had told Stillwell the sludge was not hazardous. Cunningham's attorney asked Stillwell whether he believed the yellow sludge being stored as Rose Lab was hazardous. The Government objected to the testimony on the grounds of lack of qualification and reliability.

The District Court of Appeal sustained the government's objection. The eleventh circuit affirmed, holding that "Cunningham failed to establish the reliability of Stillwell's proffered testimony under the standards laid out by the Supreme Court in [*Daubert*] and [*Kuhmo*]."[60] The government had shown "that Stillwell's opinion was based on an unproven testing method and that he was unfamiliar with relevant regulations."[61] As a result, Cunningham had not shown that Stillwell's opinion was "scientifically valid" by *Daubert* standards. Cunningham was not called as an expert witness or qualified as an expert.

It would seem that a Canadian Court would simply have excluded the evidence as a result of failure to meet the minimum threshold in *Mohan*, particularly, lack of qualification. However, it is interesting to note how the *Mohan/Daubert* criteria can filter into pseudo-lay witnesses' testimony, and how counsel must be alert to these issues even when expert witnesses are not in the stand.

[60] *Cunningham, ibid*. at 1197
[61] *Cunningham, ibid*.

B. Environmental Tribunal and Civil Cases:

As a practical manner, administrative agencies are not bound by the strict rules of evidence governing jury trials.[62] In *re Soulutia, Inc.*, the Environmental Appeals Board ("EAB") noted that when dealing with expert evidence "agencies are not bound by the strict rules of evidence."[63] Consequently, "Rule 702 and the *Daubert* factors are not controlling principles." This position was endorsed in *In re Tiger Shipyard*.[64]

Nevertheless, *Daubert* has been considered and applied by several administrative bodies in order to determine the admissibility of expert testimony. In *[In] re City of Salisbury*,[65] the EAB suggested that *Daubert* factors "may provide useful guidance in determining the weight of evidence presented in an administrative proceeding." *In re Lobsters, Inc.*,[66] the administrative law judge, dealing with a proceeding involving the National Oceanic and Atmospheric Administration ("NOAA"), stated that the "*Daubert* factors may be used, not to exclude evidence, but to determine the reliability of expert testimony,"[67] and that he was guided by the Federal rules of Evidence and *Daubert* to "determine the reliability of evidence presented by each qualified expert."[68]

The result of these cases is that the applicability of *Daubert* to administrative hearings is seen more as a tool for assessing the evidence in totality, than a required legal analysis at the admissibility stage.

Expert evidence can address both liability and damage issues. In *United States v. Great Lakes Dredge and Dock Co.*,[69] the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, brought suit against the dredging company for damages under the National Marine Sanctuaries Act (NMSA) for destruction of the sea bottom in the Florida Keys. The U.S.

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[62] See e.g. *Dennett v. NTSB*, 66 F.3d 1130, 1137 (10th Cir. 1995); *Calhoun v. Bailar*, 626 F. 2d 145, 148 (9th Cir. 1980) as cited in *Application of Daubert*, *supra* note 18 at p.7.

[63] 2001 WL 1549338 (E.P.A. 2001)

[64] 1999 WL 1678486 (E.P.A. 1999).

[65] *In re City of Salisbury*, 2000 WL 190658 (E.P.A. 2000).

[66] *In re Lobsters, Inc*. 2001 WL 1632538 (N.O.A.A. 2001).

[67] *Ibid.*

[68] *Ibid.*

[69] 259 F.3d 1300 (11th Cir. 2001).

requested damages for the cost of acquiring the equivalent of a sanctuary resource and for the value of lost use of the resource until such time as a new resource could be acquired.[70] A Habitat Equivalency Analysis ("HEA") was used to scale the area to be restored to quantify damages.

The defendants argued the HEA should not have been used since it was not appropriate under *Daubert* as a methodology for determining damages in the case, nor was the underlying "scientific data" used in the mathematical equations as part of the HEA. The Eleventh Circuit Court rejected both of these arguments. The Court found that the underlying scientific data satisfied *Daubert* and determined that the District Court did not abuse its discretion when it ruled that use of the HEA was appropriate. The HEA was peer reviewed and accepted prior to trial and the scientific data were adequately addressed.[71]

Daubert arguments may be made in relation to affidavit evidence as well. In *United States v. SCA Services of Indiana Inc*.[72] a fourth party defendant (HWI) brought a motion to strike an affidavit of Stephen Meyers, the expert witness of the third party defendants. Meyers' affidavit, filed in support of a motion for summary judgment, concluded that HWI's waste stream resulted in the release, or threatened release, of hazardous substances. HWI claimed that the affidavit was unreliable and inadmissible because Meyers showed no scientific method for his conclusions. There was no chemical analysis or review of levels in his affidavit. Relying on *Daubert* in part, HWI claimed that the affidavit did not explain how the expert arrived at his conclusions and therefore, the conclusions were mere speculation. The court agreed. The court also questioned his expertise based on the copy of a C.V. filed. Accordingly, Meyers' conclusions were without foundation and his affidavit was held to be inadmissible.

In *Freeport-McMoran Resource Partners Ltd. v. B-B Pain Corp*.,[73] Freeport sought contribution from other responsible parties under CERCLA for clean-up costs it incurred in connection with a former co-disposal landfill site. The landfill had received both hazardous and non-hazardous

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[70] *Application of Daubert, supra* note 18, at p.9. This request was pursuant to section 1432 of the National Marine Sanctuaries Act. Quere whether damages for site restoration in Ontario falls under the same analysis used in this case.

[71] Ibid.

[72] 1995 WL 569634 (N.D. Ind. 1995).

[73] 56 F. Supp 2d 823 (E.D. Mich. 1999)

waste. According to Freeport, each defendant it named had shipped waste to an incineration facility in drums, and those drums, after removal of the liquid, were sent to the landfill for disposal. Freeport alleged that the drums still contained sludge and residues which caused contamination of the landfill. Freeport had no direct evidence and attempted to rely upon an expert witness to establish this.

The expert indicated he reviewed records relating to the drummed waste and based his opinion, in part, on his own personal experience relating to hazardous substances. The defendants challenged the testimony on the basis of statements made in the expert's deposition as to the lack of personal knowledge of the defendants' shipping practices, and that he conducted no studies or experiments upon which to form his opinion that the defendants' waste was shipped for ultimate disposal to the landfill. As part of his deposition testimony, he admitted that he did not perform any scientific tests to confirm his conclusions and he did not evaluate any margin of error. The court ruled the opinion inadmissible for failure to meet the *Daubert* threshold. The Court found that the testimony did not reflect a theory or technique that could be tested, and no peer review existed for the work he performed. No standards controlling the technique's operations were identified. The record was entirely lacking of any indicia identified by *Daubert*, or of any general acceptance. [74]

The case is particularly interesting not for the ruling, but for the effect. Following the ruling, the plaintiff was left with virtually no evidence in support of its action and the Court went on to grant summary judgment in favour of many defendants given the lack of evidence in the record on that critical issue.

A similar effect occurred in *Dura Automotive Systems of Indiana, Inc. v. CTS Corp.*, [75] where after ruling the expert's evidence inadmissible, counsel for the party who had attempted to call the expert sought to introduce new evidence from other experts in the same consulting firm as the first expert witness, and who had direct knowledge and expertise in the modelling issue that

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[74] 20th Annual International Conference on Soils, Sediments and Water, Chapter 5: Contaminant Fate and Transport in the Courtroom by Charles M. Denton and Michael Sklash, section 4.3.1, p. 100-102. According to another author, the plaintiff's expert had served as an expert witness in over 183 cases primarily for the federal government – see David Ries and Mattew Jarrell: Expert Opinions in Environmental Cases After *Daubert* and Amended Federal Rule 702 in 22 Energy & Min. L. Inst. ch 13 (2002) at p.459.

[75] 285 F.3d 609 (7th Cir.2002)

the original expert sought to testify about. The Court held that it was too late to introduce new experts, and that these new witnesses were not merely attesting to facts underlying the original expert's testimony. The new witnesses were experts in different specialties. The action was dismissed for lack of supporting evidence.

5. Confusing the Gatekeepers:

Many commentators believe it is difficult to predict the outcome of a *Daubert* challenge. As one American author noted: "no clear trend on the admissibility of expert evidence has arisen."[76] This inconsistency likely "stems from the fact that most judges lack the necessary scientific training to adequately assess a *Daubert* challenge."[77] This concern is not new. Chief Justice Rehnquist, dissenting in *Daubert*; "thought it unlikely that the quality of a scientific proposition could ever be properly evaluated by a court that lacks the necessary background knowledge and expertise."[78]

This concern is echoed in Canada. Binnie, J. noted that the *Daubert* approach requires a level of scientific sophistication on the part of the judge that the earlier consensus approach did not. He noted:

> [M]any courts are continuing to have serious difficulties in digesting and evaluating scientific evidence, even rather crude scientific evidence [. . .] for both institutional and procedural reasons. Institutionally, judges hesitate to exclude such evidence in a jury case for fear of usurping the fact finding function of the jury. Procedurally, in a judge-alone case, there is always a temptation to let the evidence in, fully understood or not […][79]

The risks remain. Excessive disclosure of scientific methodology could be an enormous waste of time and money which ultimately may lead to greater confusion than assistance. Judicial pronouncements on scientific issues beyond a courts' expertise may lead to improper consideration of evidence. But ultimately, if the validity of the methodology cannot survive scrutiny from counsel, who are not necessarily schooled in the scientific issues being engaged, perhaps the evidence really is not ready to serve as the ground for judicial pronouncements. Or,

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[76] *Application of Daubert*, *supra* note 18 at p. 10.

[77] *Application of Daubert*, *ibid.* at p. 10.

[78] *Binnie*, *supra* note 8 at para 26.

[79] *Binnie*, *supra* note 8 at para 25

perhaps the questioner (present company excluded!) is the root of the issue and has confounded the court with his or her own lack of understanding of the key scientific issues.

6. Conclusion:

Canadian litigants face the same set of challenges as those in the United States and only a limited number of tools have been highlighted by the courts to attempt to make determinations on the admissibility of scientific evidence. In an environmental context, there are not enough cases to predict the outcome of challenges, especially in Canada with the lack of reported environmental cases with these types of challenges. As a result, litigants may be hesitant to introduce evidence which could be considered "novel science" or alternatively, fail to consider the issue entirely and lose key witnesses' evidence. Those who choose to challenge the introduction of "novel evidence" may have little basis on which to determine their likelihood of success, but counsel should be alert to the various procedures available during which these issues can and should be raised.

As Canadian environmental law evolves, it will be interesting to see if a consistent approach to the admissibility of "novel science" emerges. Consider whether competing opinions on remedial approaches to a contaminated property, where there are relatively new technologies, would pass the *Mohan* and *Daubert* tests. While the expert may be qualified in their respective fields in general, are they specifically qualified in the circumstances of the case? Is the methodology sufficiently tested or defensible? Where modelling forms the basis of remedial decisions how is a court to reconcile uncertainty with scientific approach, or competing models? Is uncertainty in any aspect of the evidence sufficient to attack admissibility, or merely weight? Should these questions and this uncertainty be reason alone to stick with known methods, perhaps stilting innovation in the area? Perhaps the shift away from scientific consensus addresses this latter issue. In *B. F. Goodrich v. Betkowski*[80], the court noted that "environmental science was ill suited to lead a fact finder toward definitive answers". While I am not sure the consultants or the lawyers today would agree, it remains a challenge. Those that address their mind to the issue at the earliest stages of collection and presentation of evidence are likely to be able to look for opportunities to obtain the necessary information from their own experts, test the validity of

[80] 99 F.3d 505(2d Cir. 1996), cert denied, 118 S. Ct. 2318 (1998).

theories presented, and challenge those of their opponents. Those that do not concern themselves with the issues until trial, may find portions of their evidence, or entire witnesses, excluded or may have lost opportunities to challenge their opponent's expert evidence.