



Engineering Sciences Section – 2011

C3 Environmental Forensics: A Repository for Junk Science

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After attending this presentation, attendees will be able to identify the indicators of junk science in environmental forensic science cases.

This presentation will impact the forensic science community in learning how to deal with junk science in environmental forensic litigation.

The inconvenient truth about environmental forensics is that the U.S. Supreme Court rulings of *Daubert*,¹ *Joiner*,² and *Kumho Tire*³ backfired. The groundwork laid in these cases was intended to provide a series of tests for a judge, as the “gatekeeper”, to discern and allow appropriate science to be heard by the trier of fact, and to keep “junk science” out of the courtroom. Instead, it has led to the promotion of junk science. The U.S. Supreme Court’s rulings are being used to advance the specific junk science needed to aid the “expert’s” client and not the good science needed to inform the trier of fact. This so-called expert publishes the pertinent method and case studies in a peer-reviewed journal, which immediately addresses and satisfies *Daubert*’s peer-reviewed test and implies complete acceptance by the scientific community.

This is wrong because: (1) they are purportedly publishing a scientific method (one they know little about in many instances) when in fact, they are using the article as a vehicle to solidify or validate their position in a particular litigation case; (2) the “science” and its application that they espouse is seriously flawed and not worthy of publication; and, (3) publication of information from an ongoing litigation matter is professionally and ethically wrong and potentially prejudicial when offered to the court as evidence of the validity of their approach. These published papers have several attributes in common that should caution the reader and a judge about the objectivity of the interpretation of the environmental forensics used to form the so-called expert’s conclusions

The author or authors have little or no formal training concerning some of the disciplines in the article or case. For instance, in *Cornell-Dubilier Electronics, Inc. vs. Home Insurance Company*,⁴ in which the scientific disciplines were chemistry and hydrogeology, an expert was accepted by the court as an environmental scientist even though this “expert” testified that he had no expertise in either chemistry or hydrogeology.

A case study is used that is in litigation. The litigants are not given but the data maps and case description are included in the article. The fact that the author’s interpretation of the data has been accepted for publication has made it at least ironclad, most likely gold-plated, for use in the trial.

The publication will contain numerous general references. For instance, a ten-page article might have 50 references, which gives the article the illusion that the article is of a very scholarly work.

The interpretation of the data in the article is rarely accompanied by any actual data. There are tables of general or average results, with little, if any, backup sampling and analytical information.

Age-dating releases are a favorite topic in these publications. In each article there are many variables given, which are basically “fudge factors,” used to determine the date of a release of a substance. A favorite tactic is the use of numerous methodologies that provide the same result. These methodologies are accepted as good science, with lots of general references and very little data and quality control. Numerous avenues filled with fog give the impression of a clear and definitive picture.

The development of the *Daubert* hearing for experts has the inconvenient consequence of promoting peer-reviewed junk science publications. What should have created rigorous hurdles that good science could easily clear has, instead, become a pole vault. No wonder the “gate keepers” are in Never Never Land.

References:

1. *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993).
2. *General Electric Co. v. Joiner*. 522 U.S. 136 (1997).
3. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999).
4. *Home Insurance Company v. Cornell-Dubilier Electronics, Inc.* Superior Court of New Jersey Law Division: Mercer County, Civil Action No. MER-L-5192-96.

Environmental Forensics, Junk Science, Age-Dating