An Environmental Whodunit

Back in June 1999, this column covered the role that environmental experts played in the case depicted in the movie “A Civil Action” (1998). The now infamous toxic tort case involved a group of families in a small Massachusetts town, who alleged that two major corporations—W.R. Grace and Beatrice Foods—contaminated drinking water wells that later caused six deaths from leukemia (see “A Civil Re-Action,” EM, June 1999, p. 79). Following that came the movie “Erin Brockovich” (2000), which told the true story of a California town pitted against a powerful utility company for allegedly causing groundwater pollution and subsequent health effects. Both films brought issues of environmental contamination to the forefront. What goes on behind the courtroom doors in these types of toxic tort litigation claims typically hinges on an “environmental whodunit” based on testimony given by expert witnesses who specialize in environmental forensics. This emerging field has been garnering an increasing amount of attention in recent years.

WHAT IS ENVIRONMENTAL FORENSICS?

When analyzing a case, lawyers will often declare, “The devil is in the details.” The outcome of environmental tort cases often boils down to arguments from experts on both sides brought in to convince the jury of their position. The plaintiff seeks out experts in environmental forensics to provide testimony about the sources of environmental contamination at the root of a dispute. One side will generally seek out experts willing to testify that the defendants are responsible for environmental contamination that later caused health impacts, property damage, or some other type of harm to the plaintiff. Meanwhile, the defendant will offer up experts to plant seeds of doubt in the jury’s mind that other contributing factors or sources may have been responsible.

Environmental forensics experts are really detectives who rely on groundwater, soil, or air sampling, and scientific models to predict or assess groundwater flow, contaminant fate, and transport in various media. They may also rely on processes like plume dating and chemical fingerprinting. Determination of the potential source of one or more environmental contaminants is typically done through a combination of chemical analysis and interpretation, together with a determination of the possible migration pathways that could permit the transport of the material from the alleged source to its current location in the environment. The analysis becomes particularly challenging when more than one source is capable of providing some or all of the contaminants. Once a suspected source is identified, it is necessary to confirm that a pathway exists along which the chemicals could be transported from a source to their current location in the environment. A good understanding of the subsurface environment is essential. Mathematical modeling can be a useful tool in this analysis, provided sufficient data exist to use the models properly.

In the movie “A Civil Action,” the case focused entirely on technical information related to whether the companies were responsible for environmental releases, whether said releases could have reached the contaminated drinking water wells within a particular timeframe, and whether any other sources may have been responsible for the contamination. Expert witnesses hired by both sides included environmental professionals with expertise in geology, hydrogeology, and chemistry. During cross-examination, the qualifications, credibility, assumptions, and opinions of each expert were questioned. Different chemical transport models were used to reach different conclusions about the companies’ culpability for the contamination. In the end, the plaintiffs’ expert witnesses failed to convince the jury that the companies were responsible for the contamination, and the case never advanced to the issue of whether the leukemia deaths were caused by the contaminated drinking water wells.

As evidenced by this highly publicized case, claims involving environmental contamination causes can be extremely
complex issues to try in a courtroom. Finding expert witnesses who can survive aggressive cross-examination by opposing counsel is challenging. Witnesses will need to withstand scrutiny of their qualifications, scientific approach, assumptions, limitations, and opinions.

NEW FORENSICS STANDARD

Still a relatively new field, this emerging discipline has mushroomed into a science encompassing the fields of chemistry, geology, hydrogeology, forensic archeology, historical research, and contaminant modeling. Now the subject of a peer-reviewed journal established in 2000 (Environmental Forensics Journal; www.environmentalforensics.org/journal.htm), environmental forensics has come a long way. A recent landmark court decision highlighted the need for standardizing the process by which environmental forensics experts are selected and used to argue cases involving environmental contamination.

In 1993, the U.S. Supreme Court issued a pivotal decision in Daubert vs. Merrell Dow Pharmaceuticals, setting a precedent for the admissibility of expert opinions in federal courts. Specifically, the court held that district court judges have a “gatekeeping role” to determine evidentiary reliability of scientific evidence before it is admitted, and redefined the requirements for admissibility of scientific evidence. This essentially meant that courts had a requirement to screen expert opinions for reliability in an effort to exclude “junk science.” The decision received widespread attention and triggered a series of Daubert-rooted efforts in which attorneys challenge their opponent’s expert witnesses in an effort to have damaging scientific testimony stricken from the record. The problem, according to environmental forensics experts, is that the federal courts and other judicial and administrative decision-making bodies, in most cases, will not have individual or collective technical expertise in the fields of environmental science and engineering, and there is currently a lack of standardized environmental forensic procedures. This leaves an environmental expert at the mercy of a skilled attorney. Challenges that rely on the Supreme Court’s decision have become so prevalent that, like the Internet search engine Google, it is now used as a verb by those in the know: “The expert’s testimony was ‘Daubert-ed out of court.’”

Last year, ASTM International, a large voluntary standards development organization, created a Forensic Environmental Investigations Subcommittee (E50.06), as part of the E50 Committee on Environmental Assessment, Risk Management, and Corrective Action. The problem the group is seeking to address, according to Steve Hilfiker, chair of the ASTM subcommittee, is that “courtroom challenges to an opponent’s expert witnesses, even in cases where the experts are entirely competent, succeed due to the lack of professional standards in the emerging field of environmental forensics.” The group’s ambitious goal is to write consensus-based guidelines for determining the admissibility of forensic scientific evidence and how to qualify an expert to provide expert opinions, as well as qualify the substance of an expert’s testimony. Attention will be given to issues such as experimental procedures for documentation, environmental sampling, testing and analysis, and assessment. The group will also develop scientific standards specifically for main classes of environmental contaminants in various media, building on existing science from the U.S. Environmental Protection Agency and other government agencies, professional or trade associations, as well as peer-reviewed literature.

ON THE HOT SEAT

Unfortunately, toxic tort cases are a fact of life. Disputes over contamination caused by one party to create harm for another are not uncommon. Over time, as the science matures, environmental forensics will likely develop into a standardized methodology applicable to identifying the origin of a contaminant release in any environmental setting. For those who contract out to provide expert witness testimony in environmental disputes, this process is one that you will likely be hearing more about, and one worth paying attention to!

FOR MORE INFORMATION

The ASTM Forensic Environmental Investigations Subcommittee (E50.06) welcomes the participation of scientists, legal professionals, government, insurance, and industry representatives, and other interested parties from around the world. For more information, contact Chair Steve Hilfiker, owner of Environmental Risk Management Inc., Fort Myers, FL, at shilfiker@ermi.net.

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