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DEVELOPING AND PRESENTING TECHNICAL EVIDENCE

For All Practical Porpoises

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Making the Complex Simple: Presenting Technical Evidence

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1. Let's start with a fundamental point: what are we talking about when we talk about technical evidence?

Technical evidence takes many forms, but the most common are (1) expert testimony, (2) expert reports, (3) laboratory results, (4) testing data, and (5) research papers. Expert testimony and reports are typically offered specifically for purposes of litigation or other regulatory proceedings, while laboratory results, testing data, and research papers are often prepared for academic or research purposes, although they also can be done solely for litigation. Regardless of the type of evidence, or its origin, all can be relevant, persuasive evidence in regulatory proceedings and other litigation.

2. What are some current issues in the area of technical evidence?

A. TCEQ Rules for Accredited Environmental Testing Laboratory Data and Analyses

At the state regulatory level, the Texas Commission on Environmental Quality (TCEQ) recently had to address the applicability of 30 Tex. Admin. Code § 25.1, which provides that the TCEQ:

> "may accept environmental testing laboratory data and analyses for use in commission decisions regarding any matter under the commission's jurisdiction relating to permits or other authorizations, compliance matters, enforcement actions, or corrective actions **only if the data and analyses are prepared by an environmental testing laboratory accredited by the commission under this chapter."**

In TCEQ docket number 2019-1156-IWD, involving an application for a wastewater discharge permit, the TCEQ had to address whether this provision meant that all environmental data testing and analysis used in TCEQ permitting matters had to come from an accredited laboratory. Ultimately, the Administrative Law Judges determined that it did not. The presiding judges noted that the requirement applied only to data and analyses from an "environmental testing laboratory," which was defined in the rule as one which "performs analyses to determine the chemical, molecular, or pathogenic components of environmental media for regulatory compliance." See 30 Tex. Admin. Code § 25.2(6).

Thus, the judges found that the requirement of accreditation applies only to testing data that is compiled for the purpose of an "analyses to determine the chemical, molecular, or

pathogenic components of environmental media for regulatory compliance." The TCEQ did not modify or reject the judges' determinations, and included conclusions of law in the final order that supported the judges' determinations. Accordingly, testing and analyses done for purposes other than "to determine the chemical, molecular, or pathogenic components of environmental media for regulatory compliance" may come from sources other than an "accredited" environmental testing laboratory, such as experts in their field or academic research institutions, for instance. For example, testing or analyses done to demonstrate the impact of constituents upon a receiving body, wildlife, or other condition, would not be done for purposes of determining the chemical, molecular, or pathogenic components of an environmental media for regulatory compliance. Namely, if you are trying to show what is *in* an environmental media, you may need to use an accredited laboratory, but if you are trying to show how the environmental media will impact something else, you may not.

B. Changes in Testing and Analyses

There are many similarities between new lab tests and modern automobile navigation systems: (1) Modern automobile navigation systems are dynamic, and incorporate changes based on the decision of a computer. We are all familiar with the "recalculating" voice that is about to inform us of the computer's updated navigational directions; and (2) Accurate information identifies specific automobiles and can be stored and examined later.

Laboratories have started using a combination of (1) dynamic and (2) accurate tests. Dynamic tests are directed by a computer connected to a lab instrument. Accurate tests reveal chemical identities. The combination of (1) and (2) allows a lab to detect and identify a chemical without deliberately looking for it.

Lab tests traditionally answer a specific question. New tests collect broad data and are filtered on demand for future questions. This limits the ability to control testing data, privacy, or other future applications of this data. New data may develop a value for other industries, and may be sold.

What is an example of how new testing may be important? Testing of soil, water, air, food and clinical samples can detect the presence of a chemical not commonly measured. Data from multiple labs can be cross compared to triangulate the source of an unreported chemical release. Previously collected test data can be filtered (or mined) for future investigations, versus requiring a fresh sample.

Looking forward: The scientific community is debating how to describe levels of confidence for combined dynamic and accurate tests. Based on past similar examples, it would be expected that a consensus will be developed in the next 1-2 years. Review boards will probably adopt new practices to address privacy issues from dynamic and accurate tests. Future investigations will use previously collected data without the need to re-test samples.

3. Presenting technical evidence to be well understood by, and persuasive to, lay persons.

One of the primary challenges in presenting technical evidence is that it may be hard for lay persons to understand the complexities involved in it. It is not simply enough to present accurate technical evidence that an expert finds persuasive, but you must also present evidence that a factfinder will find persuasive. This means that it is often necessary to "simplify" the technical evidence and what it shows.

Obviously, one of the primary ways to simplify evidence is through the testimony of the expert. As the well-worn adage goes, "If you cannot explain it simply, then you do not understand it well enough." Thus, expert testimony should not only discuss the intricacies of the data or technical evidence, but should also provide simple analogies and explanations that distill the data to basic fundamental points that can be easily understood and applied in the context of the proceeding in which it is being offered.

In addition to expert testimony, it will be helpful to have a "technical summary" of any data, studies, or testing relied upon—especially if multiple studies or analyses are used. A technical summary will distill the essential findings of each study or testing and then harmonize them to reach ultimate conclusions.

4. Is there a danger in "dumbing down" technical evidence?

One primary concern is that, in "simplifying" the presentation or conclusions of the technical evidence, you take license such that you lose credibility. While it is important to make the evidence understandable to your audience, if you use a poor analogy or take license in your simplification, you may misrepresent the evidence's actual findings, resulting in a loss of credibility or a loss in value of the actual evidence. Similarly, a technical expert who attempts to simplify findings may not realize the impact of the simplification upon the overall legal case being presented. An offhand analogy or effort to simplify technical evidence could end up communicating a concept that is harmful to other parts of the legal case. Therefore, it is important to ensure that both the attorney and the technical experts agree upon any efforts to simplify the evidence.

5. Locating and choosing expert witnesses.

Sometimes it is abundantly clear that you need an expert witness for your case, but there is not an obvious choice for your expert. In that situation, how do you locate and choose the right/best expert to prepare or present technical evidence?

Identifying a potential expert usually starts by seeking a referral from a colleague or through another expert. The right expert must balance technical skill with the ability to explain their work to a lay jury and judge. While qualifications and methodology are key to getting your

expert's opinions in the door, an expert who is unable to effectively "teach" their findings to others might not be of much use in court. Selecting experts in environmental litigation can be even more challenging because the work required can be more technically challenging and the required methodology can be more removed from everyday life. Few judges and jurors share a hard science background of most experts in environmental cases, making it all the more important that the expert present their findings in a way that bridges the understanding gap.

Once you have narrowed the search down to those experts who are qualified to perform the work it is critical that you interview the expert to gauge their personality and demeanor. An expert who is abundantly qualified to offer their opinion but inexperienced with litigation might be surprised at the intensity of cross-examination or the scrutiny by which their opinions will be picked apart by the opposing party. An effective expert must be confident in their work and able to withstand critiques without losing their cool.

6. When to use a consulting expert as well as a testifying expert.

Testifying experts are often a critical part of a legal case involving complex technical issues. However, communications and information related to testifying experts is generally discoverable, thus presenting challenges at times on the expert's ability to speak frankly on issues related to the case. Thus, it is often valuable to have a consulting expert who will not be testifying, and who can serve as an extension of the legal team and offer a full and complete critique and evaluation of the technical evidence and issues of concern. This is particularly true when the case may involve complex technical issues on which evidence can be conflicting. It will be important in this scenario to have a good consulting expert to play "devil's advocate" to ensure that the technical evidence is evaluated fully and properly, with sufficient frankness from an expert in the field, and not simply dismissed because it conflicts with a position you wish to take in the case.

Similarly, there may be some cases where you do not intend to present expert testimony yourself, but need to be able to adequately question another expert on the merits of that expert's testimony. In this scenario, a consulting expert is important to help you understand the technical evidence better to enable an adequate critique of the evidence and the testifying expert's opinions.

7. How can one deal with conflicting results or analyses by competing experts?

Education on what can cause conflicting results is important. The following are common areas that cause unbiased conflicts in laboratory results.

Everyday experiences with cooking describe laboratory testing. Two cakes may contain slightly different amounts of flour. The cakes will probably not appear or taste different. Larger differences are more noticeable, like if the cake is burnt. In a lab, slight differences between cups

of flour would be called an "error". Errors are expected in the lab just like in a kitchen. Incorrectly cooking a cake would be a "failure" in the laboratory. A corrective action for cooking could include using a timer.

When comparing conflicting results from two laboratories, asking for information about errors, failures and corrective actions is a good place to start. All laboratories should have a quality system that captures this information as well as corrections. If a lab cannot adequately describe rates of errors, failures and corrective actions, it really doesn't have a quality system. If there is no quality system, then the results should arguably be rejected. If a lab does have known errors, a reasonable question would be to ask, "What has been done to minimize those errors for my case?"

The game of pin-the-tail-on-the-donkey illustrates the concept of quality control. Labs are blindfolded and asked to test a sample. The value of the test is not as important as its consistency. Does the test pin the tail in the same place every day? QC failures often occur once every 20 tests. If a test doesn't fail at a reasonable rate, the lab quality system should be more closely examined and adjusted. This would be like pinning the tail on various parts of the donkey.

The best way to identify how well a lab performs is through proficiency testing. In a grocery store, this would be like having a secret-shopper test. Staff from other stores act like customers to test services and products. It's best if the secret shoppers are not recognized so the tests are not biased. For the lab, external proficiency providers take great lengths to keep the identity of samples secret prior to testing. A supervisor may choose to blind internal proficiency samples, which is appropriate for new or rare tests. However, eventually the testing will be biased if the lab staff recognize the samples. When looking at proficiency, bias of results is important to examine. For conflicting results, identifying what type of proficiency testing was used is important, plus the final grade. Many labs are able to fail proficiency tests once per year, but two failures require significant corrective action.

A very frustrating part of comparing labs is that each can produce inconsistent results even when following all quality steps. This is common when one lab is running "hot," and one is running "cold." A hot lab can measure smaller quantities of a chemical than the cold lab. This is not always apparent, and can require a closer examination by an expert to identify as a cause.

8. What are the best ways to challenge an opposing expert's report, data, or testing?

The first place to start when dealing with an opposing expert is that expert's prior testimony. In doing so, you are looking for a few key things, including: (1) conflicting testimony that would tend to contradict the testimony offered by the expert in the current proceeding, which can be used for impeachment; (2) testimony on relevant issues to your current case that may support other positions you may be taking in the case, even on matters the expert may not be testifying to currently, thus bolstering your case; (3) effective cross-examination techniques

related to the witness, which may be used to effectively limit the credibility of the witness or minimize the expert's testimony; and (4) prior determinations by a judge or other factfinder that the expert is not credible or persuasive, or situations in which the judge or factfinder reached opposite findings on issues the expert testified regarding.

Another method for challenging technical evidence is through equivalency of testing. For example, a lab may have 10 instruments for the same test, perhaps in different facilities. Each facility may run only one proficiency test. Which instrument/operator was used to demonstrate proficiency, and which was used to support the testimony? Delving into these issues may reveal discrepancies that can be used to discredit results.

In many cases, laboratories will need to be accredited. As part of the annual accreditation process, the lab may have to disclose known errors and corrective actions on an annual basis. These accreditation documents and reports should be requested through discovery or other information gathering. Then that information can be used to examine the testing being used in the current case, including delving into the process used currently to determine the possibility for similar errors.

Laboratories may receive formal customer complaints which can impact their credibility. These complaints may be filed directly with the laboratory, its accrediting organization, and state or federal regulatory agencies. Any complaints should be requested during discovery.

9. What are some practical issues that impact admissibility of evidence?

Counsel seeking to admit expert testimony must be able to effectively bridge the gap between the technical work of the expert and the admissibility standards under the Texas and federal rules of evidence. Counsel must be able to not only demonstrate that the methodology used by the expert is sound, but also that the data set to which that methodology was applied is reliable. This requires counsel to be conversant in the methodological basis that the expert used as well as the dataset the expert was provided to perform their work. While it is easy for a layperson to read an expert's biography and brandish their credentials to show the expert is qualified to offer an opinion, it can be much harder to get into the weeds of some their technical work and confirm it is sound. It can be especially challenging if the expert is using new or novel techniques that have either not been submitted in prior cases or that don't yet appear in relevant literature. An opposing counsel who seeks to undermine that expert's work may try to challenge the admissibility of the opinion or instead save their ammunition for effective cross examination (which will often be informed by an opposing expert's opinions).

10. Do you see differences in admissibility of technical evidence between administrative hearings and district court hearings?

Although they generally are to be governed by similar evidentiary rules, administrative hearings and civil litigation often involve different pragmatic considerations when it comes to the admissibility of technical evidence. Judges in administrative hearings tend to be more lax in the

admission of technical evidence. This is particularly true in states like Texas, where a central hearings panel may be used for regulatory hearings for many different agencies. In this scenario, the judges often hear many different types of regulatory proceedings—from environmental, to insurance, to utility, to professional licensing matters. Because of this, the judges are not technical experts but they recognize the agency for which they are holding the hearing may have technical and policy expertise related to the subject matter. There are no juries, so administrative judges tend to err on the side of admitting technical evidence and then opining on its persuasiveness. But, in so doing, the judge leaves open the door for the agency decisionmakers, who may better understand the technical evidence, to reach a different conclusion on the persuasiveness of the evidence.

On the other hand, if the judge excludes the evidence, this would remove any possibility of the agency decisionmakers considering it, which might result in a remand of the case for the evidence to be admitted later or a scenario where relevant evidence is not in the record and this results in a decision that is based upon an inadequate record. Accordingly, technical evidence tends to be subject to slightly lesser scrutiny in administrative hearings than in civil litigation in the district courts, and administrative judges tend to admit technical evidence more readily to ensure a more complete record for the agency decisionmakers.

In the district courts, judges are used to conducting both bench trials and jury trials, so they tend to have developed a uniform way of handling technical evidence, which is designed to ensure that jury members (who are often deemed unable to properly distinguish properly relevant evidence from improper, irrelevant evidence) are not given irrelevant, unreliable evidence. Thus, the judges tend to scrutinize evidence more closely to ensure that reversible error does not occur. Further, either the judge or the jury is the factfinder, so the judge is not worried about ensuring the evidence is given to a more knowledgeable third party—like a state agency with technical expertise—for consideration. Rather, the judge is concerned only with the reliability of the evidence, which means the judge must more carefully and fully serve as the gatekeeper.

11. How do you see the presentation of technical evidence changing in the coming years?

Academic learning skills developed during COVID-19 will have a strong impact on technical evidence for many years. During that challenging time, teachers and students were both forced to quickly adapt to a remote learning environment. Out of necessity, efficient remote learning tools were developed. These tools included the ability to observe deception, attentiveness, and knowledge retention.

For example, the identity of an expert may be verified using characteristic rhythms in their typing. Unauthorized assistance at a remote location can be reduced using periodic camera scans of any area in question. The role to detect deception at a remote location will probably develop

into a trusted support role and simultaneously increase the credibility of expert testimony. Jury engagement may be measured and improved through digital polls as a knowledge check.

There is a lot of discussion about artificial intelligence (AI), which is a rapidly developing field. For technical evidence, it is probably best to leverage data mining versus new developments in AI. Data mining is an established field and uses advanced techniques to display complex data in a simple way.