

# AEF Member Highlight

## Quattlebaum, Grooms, and Tull

“Isn’t that below the method detection limit?” It was a fair question from my client, but one that has become a moving target. We have all seen technology improve relentlessly and redefine what we can measure, how we measure it, and how we can determine if something is harmful. Vapor intrusion was not a thing until it was. Fugitive emissions were too.

On the monitoring side, it has become more common for us in the environmental realm to speak in terms of part per billion when parts per million seemed adequate a couple decades ago. A part per billion is a level of precision so small on a scale so large it is hard to grasp if we stop to think about it. And who does? One way is a second every 32 years, another is one penny out of \$10 million.

Our ability to assess risk has likewise grown, and standards such as the National Ambient Air Quality Standards (or NAAQS) have grown more stringent as technology gives us better tools for connecting health effects with, at least probable, environmental causes. And, you cannot attend an environmental conference

today without having to sit through at least one presentation on “PFAS,” a group of chemicals in use since the 1940s.

Environmental professionals have adapted to all of these changes and we will all continue to do so. With that in mind, it is worth thinking a little about a few technologies that could have far-reaching consequences on our work.

The first, and the one you and I are most likely to notice first, is 5G wireless technology. The CEO of AT&T recently gave a presentation to the Little Rock Chamber of Commerce and he detailed all the steps AT&T had taken to have 5G networks up and running in the near future. He assured us it was closer than you think. With it, your cell phone can reportedly be located within a few inches. Devices such as your car, phone, and work computer will be able to “talk” to each other constantly to a degree that is impossible now. Although on-line reporting was great,

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the lawyer in me has a hard time looking forward to when real-time, on-site reporting of monitoring results is not just possible, but easy, inexpensive, and expected by regulators and perhaps the public too (the implications for an upgraded Emergency Planning and Community Right to Know Act are fascinating).

This leads to the second technology – massive data processing. 5G networks can gather a lot more data than current networks can, but it's too much for anyone to process so it has heretofore been a bit of an academic issue. Even if you had the network for it you could never do anything with it. "AI" and quantum computing solve that problem. AI does it using tools such as machine learning to analyze vast amounts of data from manufacturers, transporters, intermediary/suppliers, and end-users. It makes it possible to cross-check what comes in and what goes out, what is reported, and how that backtests against past sampling results. Quantum computing uses brute force – Google's "Sycamore" recently solved a math problem in 200 seconds that the world's fastest supercomputers would need 10,000 years to solve.

Another technology to think about is blockchain, which is simple in theory. It is, broadly speaking, just a database that might be publicly available, that enables the secured tracking of something. RCRA's "cradle to grave" manifest system is simply begging to be replaced by a blockchain system that could be monitored by an AI system.

What is the takeaway from all of this? The government and third parties are going to have better and better tools for detecting unintentional non-compliance. The days of the surprise inspection are not done yet, but the end may be closer than we think. And if that occurs, it will only be because of technologies that allow for even better real-time monitoring of regulated facilities and operations. We really have no choice but to keep an eye on the horizon and embrace these technologies before they are imposed. They are likely to be extremely helpful to those of us who focus on compliance. Consider the possibilities of a system that warns you about a specific worker whose "paperwork" is not matching up with other data, or a system that predicts maintenance problems with monitoring equipment before they occur. Just one of the many benefits of being an AEF member is that none of us has to monitor all of these things on our own. Change is coming, but for those of us in the environmental field that's nothing new, and the AEF will be prepared.

Michael B. Heister, Member  
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