

Q&A FROM EDR'S PFAS AND DUE DILIGENCE WEBINAR: PRACTICAL INFORMATION FOR MANAGING THIS EMERGING RISK



SPEAKER: Dr. Harry Behzadi, Vice President of Business Development for SGS-EHS North America

On June 18th, 2019, we hosted a webinar with more than 1,500 attendees on the dangers of Polyfluoroalkyl Substances, or PFAS, and what it means for property due diligence. During the live event, leading national PFAS expert, **Dr. Harry Behzadi** of SGS shared the latest intelligence on what is known about PFAS risks, common sources, the states that are taking the lead on regulating PFAS risk and what that means for pre-acquisition property due diligence.

Due to the volume of questions that attendees submitted during the webinar, Dr. Behzadi was unable to address each one in the available timeframe. Below are his answers to all of the questions submitted, organized by topic (e.g., Sampling, Sources of PFAS, Regulation, etc).

We appreciate Harry's time on the webinar, as well as his time in answering all of the questions. As one webinar attendee noted *"There was a lot of information presented, and it was organized well."*

NOTE TO READERS: The answers below were provided to EDR by Dr. Behzadi unless otherwise noted.

SAMPLING

Do you have to wear certain types of gloves while sampling? Are standard nitrile gloves okay for sampling this substance?

"Nitrile gloves are recommended for sampling. Gloves should be changed frequently to prevent cross contamination."

What is the cost of TOP analysis? Are there many laboratories that are set-up for this analysis?

"Typical cost for TOP assay with pre and post conversion analysis is \$750-\$900."

What are the standard testing costs?

"Drinking water analysis by EPA 537 is typically \$200-\$300 a sample. The method does require a Field blank with each sample. Groundwater and soil samples are typically in the \$250 to \$350 range depending on the number of samples, actual matrix, and analyte list."

Is distilled water acceptable when sampling for PFAS (not in lab, but in the field) instead of de-ionized water?

"Distilled and de-ionized water (bottled water) are not necessarily PFAS free. It is recommended that PFAS free water be supplied by the lab. Note: For large projects, it may be beneficial to buy bottled distilled water and have it pre-tested by the laboratory. Another thought is to use bottled distilled water for the initial decon and then do a final rinse with laboratory PFAS free water."

Where do we get deionized PFAS-free water for rinsing equipment?

"PFAS-free water can be provided by the laboratory."

I know we discussed plumes in the webinar, but I have a follow up question. If we are sampling for multiple parameters at one well, once we use Teflon tubing for VOCs, will this introduce PFAS into the well? If so, what is the radius of the influence? If there is another well that is a part of the *sampling event* will it then be influenced?

"Teflon itself is not an issue, we actually do not look for Teflon or the polymers. The issue is other analytes that may be co-produced or used in the production process of Teflon. If it has been thoroughly cleaned it should not contaminate anything. But there is the issue, since PFAS does not show up in normal tests, how do the manufacturers clean their Teflon? So potential PFAS contamination from Teflon can vary from batch to batch and product to product. The conservative approach would be to cut up pieces of the Teflon tubing and soak it in a bottle of PFAS Free DI water for a day or so, then test the water."

For the PFAS forensics, how many of the PFAS compounds are being used?

"When dealing with PFAS forensics, you need clear project definition, information on products, site history, and an investigative plan. Then you analyze for as many compounds as possible and use TOPs for the mass balance. Based on all of the data, you might be able to rule out contamination from certain sources or contribute it to a certain source. Be aware that PFAS forensics is still in its early stages."

For the slide that shows relative plume size, the plumes are depicted to detection limits. How much of the depicted size of the PFAS plume is resultant from the lower detection limit for that material?

"The lower detection limit does contribute to the size of the plume; however, the health advisory levels are also significantly lower for PFOA and PFOS than for other materials like, for example, Benzene. The other concern is that PFAS analytes tend to move through the water column at a much quicker pace."

Can we use PVC bailers for PFAS sampling?

"PVC bailers should be okay for sampling. However, it may be best to analyze a rinsate blank before conducting sampling."

What about passive diffusion bags limits their use in PFAS investigations?

"There are two primary concerns: (1) PFAS analytes are by design "sticky" and may adsorb to the PDB surface, and (2) PFAS molecules are large and may not pass through the PDB membrane."

Would you suggest that all DoD sites test for PFAS?

“DoD has been doing that for the past several years. Their initial focus was to identify sites where PFAS contamination has an impact on drinking water.”

Does the DoD specify extraction methods of different matrices?

“QSM 5.1 and newer requires that water samples be extracted using a solid phase extraction technique.”

What is the purpose of the Trip Blank versus a Field Blank?

“Some states are requiring Trip Blanks. The difference between the Trip Blank and Field Blank is that the Field Blank is exposed to ambient conditions at the sampling site. The Trip Blank is not opened outside of the lab.”

SOURCES OF PFAS

Was PFAS ever used in firefighting foams in conjunction with carbon tetrachloride?

“No, carbon tetrachloride extinguishers or bombs were predominantly CCl4. They were designed for relatively small fires and were pretty much phased out by the 1950s. The US Navy developed AFFF (Aqueous Film Forming Foams) in the 1960s.”

Has PFAS ever been found in commercial fire extinguishers?

“There are five primary types of fire extinguishers: Water, Powder, Foam, CO2, and Wet Chemical. Some foam-type fire extinguishers contained AFFF.”

Can you provide any reference books/papers on the most likely industrial/facility types for sources of PFAS? What about a resource listing of all of the commercial materials/trade names that are known to contain PFAS?

“The ITRC website contains various fact sheets on PFAS.” <https://pfas-1.itrcweb.org/>

Who is doing forensics on PFAS?

“Our SGS-AXYS lab in Sidney, BC, Canada could help with that.”

Has all production of these compounds in the US been ceased? What about international products being imported?

“No, production of these compounds in the U.S. has not ceased. See sections 3.3 and 3.4 of the History and Use Factsheet at <https://pfas-1.itrcweb.org/fact-sheets/>”

Given how long this emerging contaminant has been in use—and that an estimated 96% of Americans have it in their blood, and with PFAS being in so many products that are used every day (some multiple times), I am scratching my head as to why PFAS haven’t been banned. It seems there is a big disconnect between the sudden health and environmental concern vs. the fact that no one is calling for an immediate ban on production and use of PFAS. What am I missing?

“Production of some of the longer chain PFAS compounds has been banned or limited in the US and other countries. See the previous question. One of the issues with banning these compounds is the lack of suitable replacement chemicals. These compounds worked really well for what they were designed to do. In some instances, the replacement chemical ended up being as bad as the original.”

REGULATIONS

Which states are regulating PFAS? Has a background level been established by the States/EPA since it appears the PFAS/PFOS are very widespread?

“Many States are regulating PFAS. NJ was the first to establish an actual MCL. See the Regulations, Guidance, and Advisories factsheet along with Table 4 and 5 on the ITRC website. <https://pfas-1.itrcweb.org/fact-sheets/> There is not yet a background level set by either the states or the U.S. EPA for PFAS/PFOS.”

Does California consider PFAS a hazardous substance?

“Currently No; however, the Department of Toxic Substances Control (DTSC) is considering listing PFAS in carpets and rugs as priority products which may limit or ban their use in the future.” <https://calsafer.dtsc.ca.gov/cms/commentpackage/?rid=12738&from=search>

Historically, sediment dredged from Ohio Lake Erie harbors has been dumped back into Lake Erie. Ohio passed a bill to make it illegal to dump sediment back into the lake after 2020. It has been proposed that this dredged sediment could be used for: manufactured topsoil, constructed farmlands, and to construct wetlands along the Lake. Would we expect PFAS to be present in the dredged sediment? Could reuse of dredged sediment result in the spreading of PFAS?

“Yes, the expectation is that PFAS would be present in the dredged sediment. Fate and transport studies have shown that PFAS accumulates in sediments, so it is possible that reuse of dredged sediment could result in the spread of PFAS. Dredge material should be tested prior to reuse.”

What does it mean that PFAS are insurance exclusions?

“Policies may eventually be written to exclude claim coverage due to PFAS related contamination.”

I've seen 70 ppt as a groundwater standard. What science/toxicity data is this based on?

“This is based upon EPA, Health advisory level, please see <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>”

REMEDICATION

What are some treatment methods developed for groundwater contamination?

“New techniques are being developed and tested; however, filtration through granular activated carbon or ion exchange resins is still the most common option. Care must be taken when using GAC to ensure that the short chained. For additional information see the Remediation Technologies and Methods fact sheet” at <https://pfas-1.itrcweb.org/fact-sheets/>

HEALTH EFFECTS OF PFAS

Where is the data in the PFAS risk table derived from?

“Those are arbitrary values that were assigned based on contamination that we have seen near various sources over the past 5 years. They are not based on any type of statistical data.”

Is the danger from PFAS family from actual contact?

“Most of the current concern is from ingestion and not dermal contact; however, several studies have shown that dermal contact on the hands is commonly transferred to the mouth.”

What, if any, are the health effects/concerns associated with PFAS in drinking water? Are the impacts considered acute or chronic?

“Among the known health effects are that PFAS exposure:

- *Increases cholesterol levels;*
- *Increases risk of type II diabetes;*
- *Decreases how well the body responds to vaccines;*
- *Increases the risk of thyroid disease;*
- *Decreases fertility in women and lowers sperm count in men;*
- *Birth defects, delayed development, and newborn deaths; and*
- *Can cause cancer in the liver, pancreas, and thyroid.*

These impacts are considered long term or chronic.”

Any comment on PFAS toxicology?

“Refer to the Agency for Toxic Substances and Disease Registry (ATSDR), “PFAs Toxicological Profile Key messages”

https://www.atsdr.cdc.gov/docs/PFAS_Public_KeyMessages_June20_Final-508.pdf

Can you explain why we don't have concerns about PFAS exposure due to daily use related to products like fast food, shampoo, etc.?

“Studies historically have focused on ingestion mainly from drinking contaminated water. More recent studies suggest that eating contaminated food may be a significant source of PFAS.”

Is PFAS linked to auto-immune conditions?

“Several studies have shown associations between PFOA and PFOS and immune-related health issues.”

DUE DILIGENCE

I have heard that PFAS was used in certain plastics for 3-D printing activities. Is this true?

“While we are not aware of anything specific, PFAS are commonly used in the production of high-tech plastics.

Is there a vapor migration issue from contaminated ground water or soil?

“There have been a couple studies done, but nothing conclusive at this time.”

Q: Is PFAS identified as a hazardous substance under CERCLA? How does the current standard address this issue in terms of making a determination as a Recognized Environmental Condition under ASTM E 1527? What is the ASTM committee doing to address PFAS for the next iteration of the Phase I ESA standard?

ANSWER provided by Dianne Crocker, Analyst at EDR:

“Right now the US EPA doesn't recognize PFAS as a hazardous substance so it's not technically regulated under CERCLA or the AAI rule. Based on outreach to Julie Kilgore and a few members of the Task Group, I'll point you to two things areas in the existing E 1527 standard:

1. *Some states are ahead of the feds on regulating PFAS at the moment. The Phase I standard as written allows for that. If you look at Section 1.1.4 of E 1527. This includes a reference to other laws already present, and applies to PFAS or other emerging contaminants for which the States are out front.*

2. *Since PFAS isn't currently regulated under CERCLA, emerging contaminants fall under non-scope considerations which means it can be added to the scope under agreement between the EP and the user. The ASTM committee is being proactive about PFAS given the attention and the risk so the task group is considering adding a mention of emerging contaminants to section 13 of the standard which addresses non-scope Issues. Also be aware that EPs have to look at state/local regulations so depending on where you are you may need to look at PFAS.*

We're obviously in a time of significant change in terms of how we as an industry handle this risk. In this interim period, the trick right now is to make sure that the users and producers of Phase I ESAs are aligned in terms of what they're buying and producing to make sure it's appropriate for the given target property and situation. Expect to see more clarity on this in the next iteration of the standard in late 2020 or 2021. And also, of course, if the federal EPA eventually names PFAS or a subset of them as hazardous substances, then they would fall under AAI and E 1527."

Q: Does EDR's database include sites where PFAS was produced or used in the past, (i.e., inactive sites)?

ANSWER provided by EDR's Crocker:

"EDR is closely watching this issue and will continue to educate the property due diligence community regarding PFAS. From a database standpoint, I'm not an expert but I reached out to a few folks here at EDR. They've been amassing PFAS databases for over 6 months now. To date, EDR has 22 state PFAS databases loaded and active in our reports and are sourcing more as we speak. These databases are listings of sites that were tested for PFAS by state agencies. There are probably many more PFAS-contaminated sites that are not yet in the databases, and we will continue to track this and add records as they become available."

ADDITIONAL MATERIALS

If you missed our June 18th webinar, **PFAS and Due Diligence: Practical Information for Managing the Emerging Risk**, a replay is available here (to access, you'll need to establish a free username/password with BrightTalk):

https://www.brighttalk.com/webcast/6761/360536?utm_source=EDR&utm_medium=brighttalk&utm_campaign=360536

Other questions?

Feel free to email Dr. Harry Behzadi directly Harry.Behzadi@SGS.com