



PFAS IN GROUNDWATER SAMPLING SYSTEMS: FREQUENTLY ASKED QUESTIONS

INTRODUCTION

Per- and polyfluoroalkyl substances or PFAS have been identified as emerging contaminants in ground water at sites worldwide. PFAS have been used in the manufacturing of numerous commercial and consumer products, from anti-stain coatings on carpeting and fabrics, non-stick cookware and waterproof clothing to fire-fighting foam, disposable food service packaging and even metal plating operations. With this widespread use, PFAS end up at secondary sites such as wastewater treatment plants and municipal waste landfills.

Site owners and their environmental consultants are being required to sample for the presence of these chemicals at extremely low concentration levels, down to parts per trillion levels (nanograms per liter). Concerns have been raised in regulatory guidance and industry fact sheets that any sampling equipment containing fluoropolymers (e.g., *Teflon®, such as PTFE, FEP, PFA and PVDF) and fluoroelastomers (e.g., *Viton or FKM) could release PFAS into ground water samples. This has already led some users to exclude – and some regulatory guidance to prohibit – the use of sampling equipment containing any fluoropolymers or fluoroelastomers when sampling for PFAS.

QED has responded to these concerns in two ways to help customers with PFAS sampling projects. Through testing of all of our existing Well Wizard® dedicated bladder pumps, portable Sample Pro® bladder pumps and our twin-bonded sample pump tubing, and the Snap Sampler® dedicated passive sampling system, we've determined that our Sample Pro pump is, and has always been, PFAS-free. This means that current Sample Pro pumps can be used for PFAS sampling. Where regulatory requirements prohibit the use of Viton/FKM O-rings, QED has Sample Pro O-ring kits made from EPDM rubber that have been fully tested to be free of all PFAS, VOCs and SVOCs.

To address the dedicated sampling system market, our testing identified materials that were either potential sources of PFAS or were manufactured from fluoropolymers and developed alternate materials that have been tested both for performance and compatibility with groundwater sampling program requirements.

- The Well Wizard Zero™ and Snap Sampler Zero™ products are completely free of all fluoropolymers and tested to be PFAS free, along with our standard VOC and SVOC testing and certification.
- The Well Wizard Clear™ pumps use the original Dura-Flex PTFE bladders with all other materials fluoropolymer free, and are also tested and certified for PFAS, VOCs and SVOCs.
- All of QED's existing twin-bonded HDPE tubing has been tested and shown to be completely free of all PFAS. While our testing has shown that our "Teflon-lined" (FEP) HDPE tubing is also PFAS-free, customers who have restrictions against using any fluoropolymers will likely opt for the all HDPE tubing. (Note that our deep well DW5000 tubing, manufactured of ETFE, tested positive for PFAS compounds and should not be used for PFAS sampling sites.)

FREQUENTLY ASKED QUESTIONS

What is PFAS and should I be concerned about it in my sampling program?

PFAS, or Per- and polyfluoroalkyl substances, are common chemicals used in the manufacturing of many commercial and consumer products, including some that sampling technicians may use. As such, there is a risk of sample contamination that could result in false positive analytical results. Generally, any items that are suspected of containing PFAS are excluded from use by sampling personnel, including certain types of clothing, personal care products, food packaging, and paper. Sampling equipment that uses fluoropolymers or fluoroelastomers such as Teflon® and Viton® is often assumed to contain PFAS and has been excluded from use for PFAS sampling by some regulatory guidance documents and industry fact sheets.

Are fluoropolymers really a concern?

Most fluoropolymers made with current technologies do not leach PFAS, but research on acceptable materials for PFAS sampling has lagged behind the initial guidance coming from regulatory agencies and industry associations. Most protocols recommend or require that no “Teflon” be used in PFAS sampling programs. Some guidance offers the option to test existing sampling systems to determine if there is any sample contamination or bias and, where demonstrated to be PFAS free, allow those systems to continue to be used.

Are there any differences in how samples for PFAS are collected?

Standard sampling procedures are generally used, with certain restrictions on equipment and materials that the sampling personnel are permitted to use during and even prior to participating in a PFAS sampling event. List of prohibited items vary by location and sampling program. The sampling crew must be familiar with the specific sampling requirements well ahead of the sampling event so that restrictions on clothing and personal care products are met.

Does my existing sampling system contain any PFAS? How can I find out?

Standard QED Well Wizard pumps and Snap Sampler dedicated passive samplers contain some fluoropolymer and fluoroelastomer materials. Some of those materials do have the potential to leach PFAS into groundwater samples. The only way to determine if existing sampling systems could contribute PFAS to samples is through collecting a sample from the existing sampling system. If PFAS is detected, it may require further testing of the well with a known PFAS-free sampling system to determine if the source is the dedicated sampling system or if PFAS is present in the groundwater.

Does anyone make sampling systems that don't contain any Teflon or other fluoropolymers?

QED has developed the **Well Wizard Zero™** and **Snap Sampler Zero™** product lines, where all the fluoropolymers and fluoroelastomers have been replaced with alternate materials. A customer who needs a completely Teflon® free sampling system should choose the Zero product lines for sampling.

Are there sampling systems that have fluoropolymers but are PFAS-free?

QED has done extensive testing of the Well Wizard components and now also has the **Well Wizard Clear™** pump models. The Clear pumps use QED's proven Dura-Flex PTFE bladders and have been tested for to be PFAS free. PTFE bladders offer the longest service life and are still the best choice for low level organic sampling. The Clear pumps can be used for PFAS sampling wherever all fluorocarbons are not specifically prohibited.

Can I retrofit my existing QED sampling system to eliminate all fluoropolymers?

Existing Well Wizard systems could be retrofit with non-fluoropolymer bladders, check balls and O-rings and removal of any PTFE thread tape and replacement of any Teflon-line tubing with HDPE twin-bonded tubing. Testing would still be required to assure that no PFAS exists in the pumps and tubing after retrofitting, so consider the cost of this testing against the cost to replace existing pumps with new Well Wizard Zero pump systems. QED plans to offer retrofit kits for Well Wizard 1100 Series pumps in the near future.

If you have an existing Snap Sampler system, the only components that have fluoropolymers are the sample bottles and the pneumatic actuator for the trigger system. The new Snap Sampler Zero bottles can be used in place of the standard bottles and contain no fluoropolymers. The actuator can also be replaced with a Zero model. All of the Zero components have been tested for PFAS and determined to be PFAS free.

How does QED test its pumps and tubing for evidence of PFAS?

To test for the potential for PFAS to leach from QED sampling products, we conduct soak testing of both assembled products and system components. The assemblies or components are submerged either in test stand pipes or certification tanks that are filled with known clean water, with blank samples of the source water collected from the tanks or pipes prior to inserting the components. After 24 hours, samples of the soak water are collected, packaged, chilled and shipped to an independent laboratory for PFAS analysis by Method 537 Modified. Results are reported at the lowest available laboratory reporting limits. To be qualified as PFAS-free, all test results must be non-detect at those reporting limits. See the QED website pages for specific products for more details on testing and certification for PFAS, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

What about the tubing used for QED pumps and passive samplers? Has it been tested for PFAS? Should Teflon and Teflon-lined tubing be avoided?

QED testing has shown that our twin-bonded HDPE polyethylene tubing, our Teflon (FEP) lined HDPE and our all Teflon (FEP) tubing options are all PFAS-free (non-detect) at the lowest available laboratory reporting limits. This means that any of our standard tubing options should be acceptable for PFAS sampling based on chemistry. However, many state regulatory guidance documents, SOPs and industry fact sheets on PFAS sampling have been recommending that users avoid ALL fluoropolymers in sampling systems. We anticipate that many users will opt for our HDPE tubing options (P5000, P5100 and P5200) for this reason. Some may choose to replace existing Teflon-lined HDPE tubing with HDPE to meet regulatory recommendations, even if their own sampling shows no evidence of PFAS in their sampling systems. QED sales and service should let customers know about these options and recommend the tubing material that fits their sampling program needs and regulatory requirements. HDPE will always be a safe choice if customers aren't sure about their requirements.

Has QED's polyethylene tubing always been HDPE, or is that something new?

QED's polyethylene twin-bonded tubing has been manufactured from high density HDPE virgin-grade resin for many years. Our tubing supplied in the 1980s and early 1990s was manufactured from medium density MDPE resin, which was later changed to HDPE to provide added pressure and depth capability and increased tensile strength to provide stronger tubing connections, support more weight and reduce tubing stretch in deeper well applications. QED is the only supplier whose standard bonded tubing is made from HDPE - no other manufacturer offers this as a standard product with quick availability from inventory.

Does QED intend to stop manufacturing sampling equipment using Teflon or other fluoropolymers?

Currently, QED does not have any plans to discontinue manufacturing, servicing or supporting our existing Well Wizard, Sample Pro and Snap Sampler products that use Teflon or other fluoropolymers. Some components of existing products may be updated to use non-fluoropolymer components (e.g., replacing Viton/FKM O-rings with EPDM or HDPE bottle caps for PFA caps) where this change doesn't affect the performance, operation or chemical compatibility of those components. Over time, our feedback from customers will guide us on longer term decisions to offer sampling system components in the desired materials of construction.