

# Emerging Contaminants:

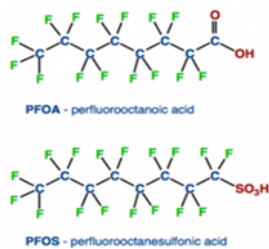
## Poly- and Perfluoroalkyl Substances (PFASs)



- PFASs are widely distributed in the environment due to their use in foams for firefighting and many other products.
- Characterizing and treating PFAS compounds is extremely challenging.
- Increased regulatory requirements are likely and many facilities will not be prepared to manage liabilities.

### PRIMARY ISSUES

- PFASs have been used in a wide range of products, including certain firefighting foams since the 60's/70's.
- PFASs are soluble, mobile, and resistant to chemical and biological degradation and are ubiquitous in the global environment at low levels.
- PFOS and PFOA are the two most-widely studied and reported PFASs. Both are persistent, bioaccumulative, and toxic in the environment and have been found in human blood and wildlife at detectable levels.
- PFASs may pose a potential environmental/human risk where these foams have historically been used in 1) firefighting; 2) vapor suppression of leaks and for hot works; 3) training; and 4) storage areas.
- PFASs are difficult to assess, remediate and treat. Existing treatment systems may not be effective.
- PFASs are released as a mixture of compounds, including many precursors of perfluoroalkyl acids, that increases complexity.
- Sampling and analysis for PFAS is problematic due to potential for cross contamination.
- Most facilities are unaware of the potential risk.
- Regulatory agencies (EPA and states) are developing standards which will soon become effective (EPA Drinking Water Advisory (70 ppt) and Regional Screening Levels (RSLs), California Prop 65, DTSC).



- Many facilities will be caught unprepared when evolving regulations go into effect resulting in significant cost implications

### STRATEGIES TO MANAGE LIABILITIES

- Develop conceptual site models for PFAS at facilities.
- Develop a risk-based approach to determine if potential risk exists at facilities.
- Consider PFAS precursors in risk analysis.
- Utilize analytical techniques that also consider precursors.
- Develop appropriate sampling protocols to avoid false positives.
- Develop risk-based screening levels for PFOS, PFOA, other PFASs, and precursors for consideration in risk assessments where regulatory guidance is absent.
- Develop appropriate protocols for managing 1) firefighting foam stocks and 2) foam-impacted water.
- Conduct R&D to address data gaps related to precursors, toxicology, analytical methods, and remediation technologies.

### HOW GSI CAN HELP

- PFASs Conceptual Site Models for facilities.
- Development of risk-based approaches for facilities.
- Development of effective sampling and analytical protocols.
- Site investigations.
- Developing risk-based human and ecological screening levels based on the latest toxicology data.
- Development of corporate/facility management plans.
- Conducting R&D on potential treatment technologies.

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