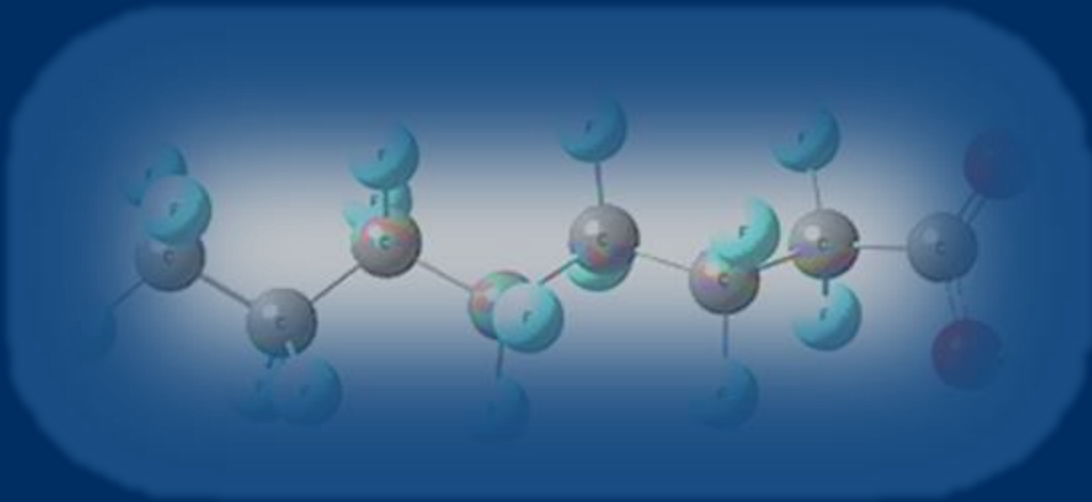


# Rising Concerns About PFAS

1

## What Surface Finishers Need to Know



Source: nw-chrome.com

**A discussion of of what PFAS are, where they come from, and how potential new regulations could impact the metal finishing industry**

# Emerging Contaminants....pick your timeframe



**MTBE (methyl tertiary butyl ether)**

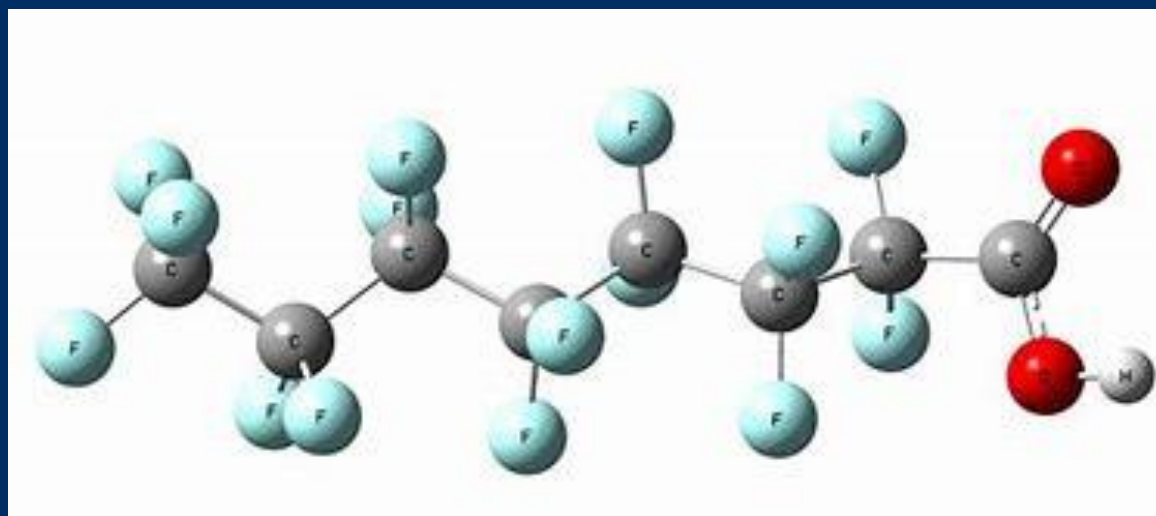
- MTBE, an alcohol ether, most widely used oxygenate of 1990s reformulated gasoline
- Because of groundwater contamination issues, 25 states banned or severely limited MTBE between 1999-2009



....and the latest Emerging Contaminant

Per- and Polyfluoroalkyl Substances

PFAS





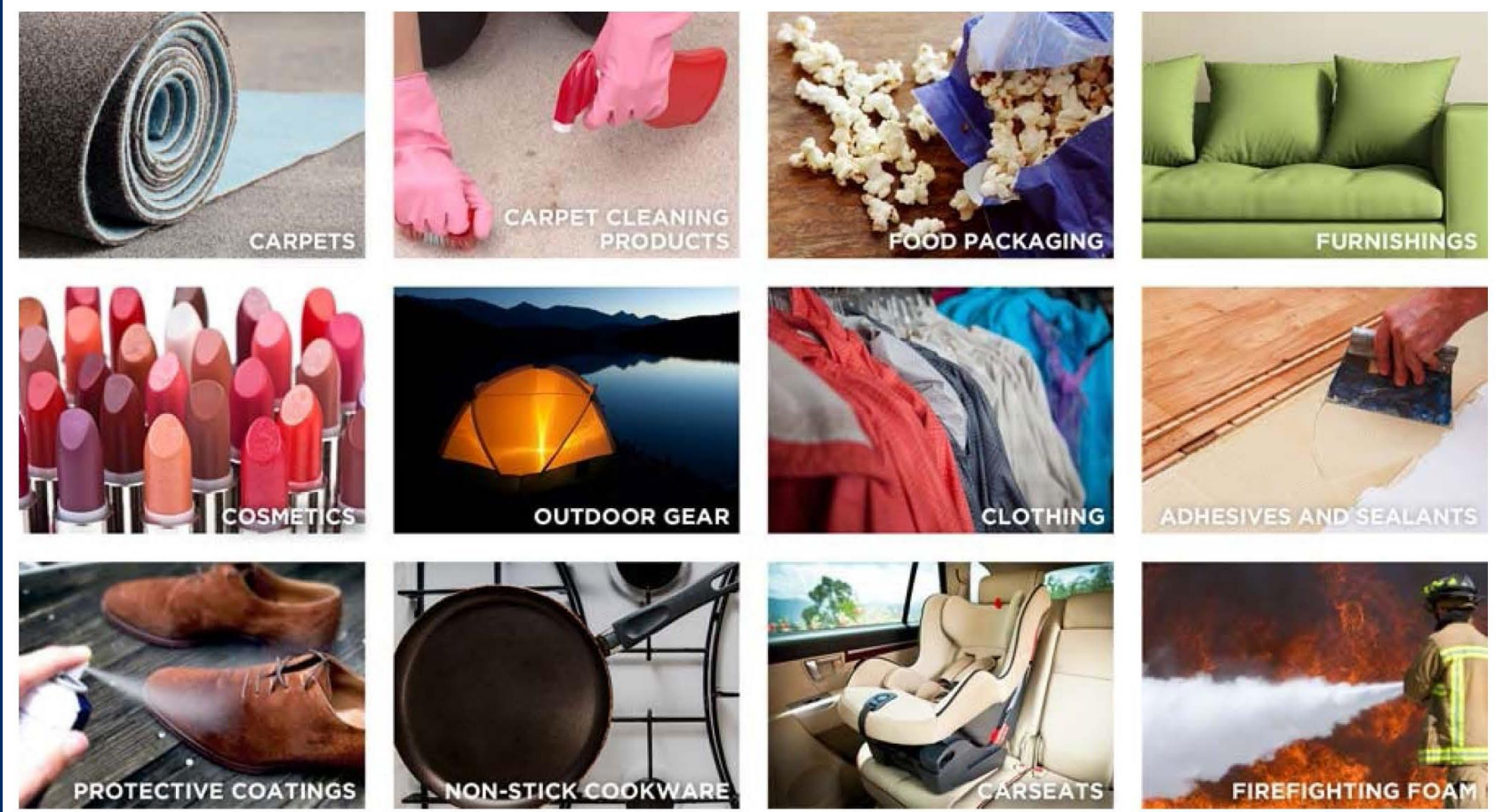
# PFAS Properties

Repel Oil and Water

Temperature Resistant

Friction Reduction

Reduce Surface Tension



Source: SixClasses.org

# PFAS Concerns

Health effects

Bioaccumulative

Mobile

Persistent





# How are PFAS Connected to Metal Finishing?

## Mist Suppressants used in Chromium Plating

Examples from 2009 USEPA Report:

Benchmark Benchbrite STX AB

Benchmark Benchbrite STX

Benchmark CFS

MacDermid Proquel B

MacDermid Macuplex STR

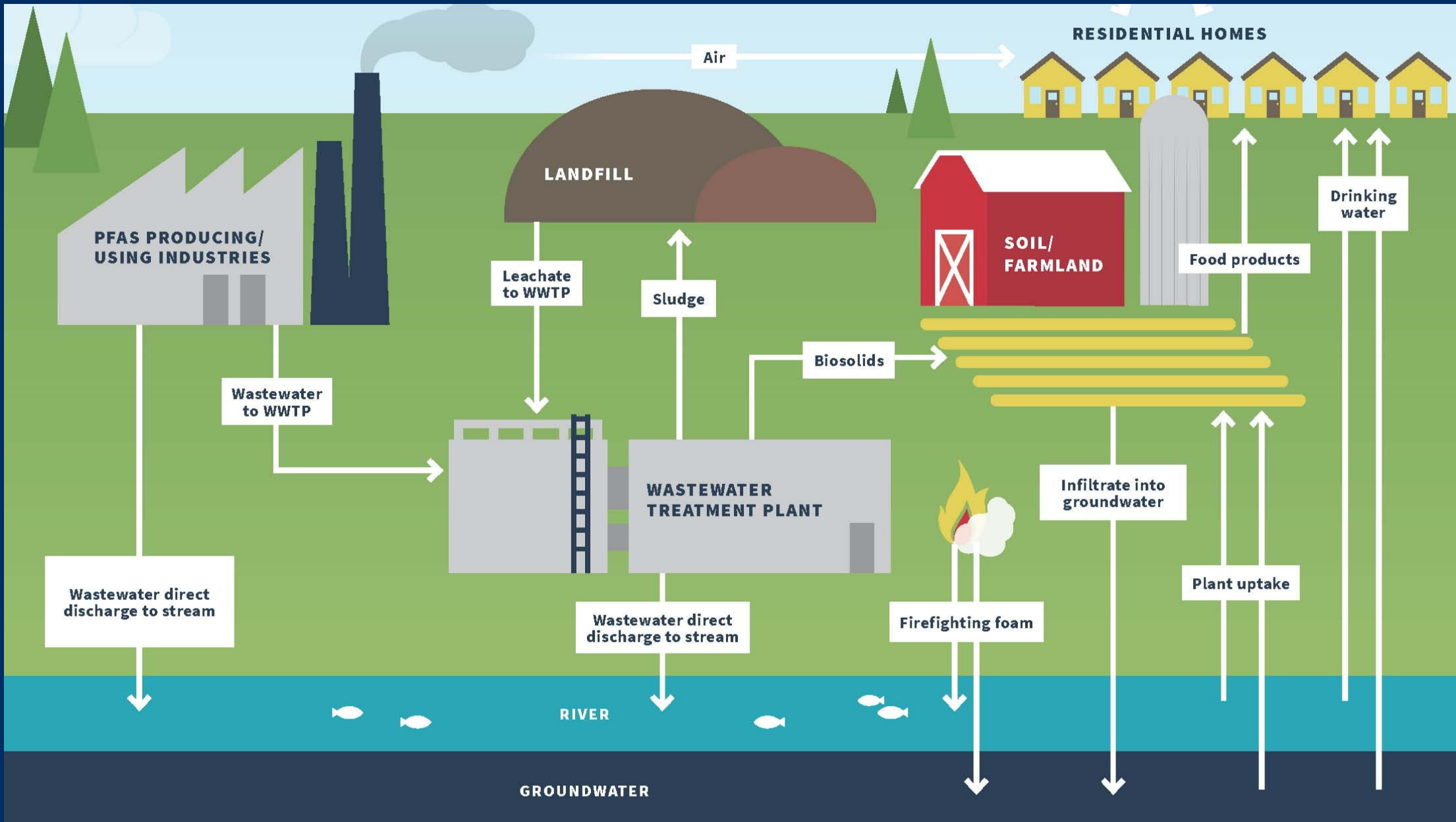
Plating Process Systems PMS-R

Fumetrol-140

Brite Guard AF-1 fume control



Source: ESTCP



Source: Michigan Department of Environment, Great Lakes, and Energy

# Challenges Dealing with PFAS

- Ubiquitous nature of PFAS
- Lack of toxicology information
- Little is known about transformation pathways
- Regulated differently depending on location
- No EPA approved analysis method for most materials
- Potential sampling cross contaminants
- High public concern





# Deep Waters Movie - Release Date November 22, 2019<sup>9</sup>



# How are PFAS Regulated?

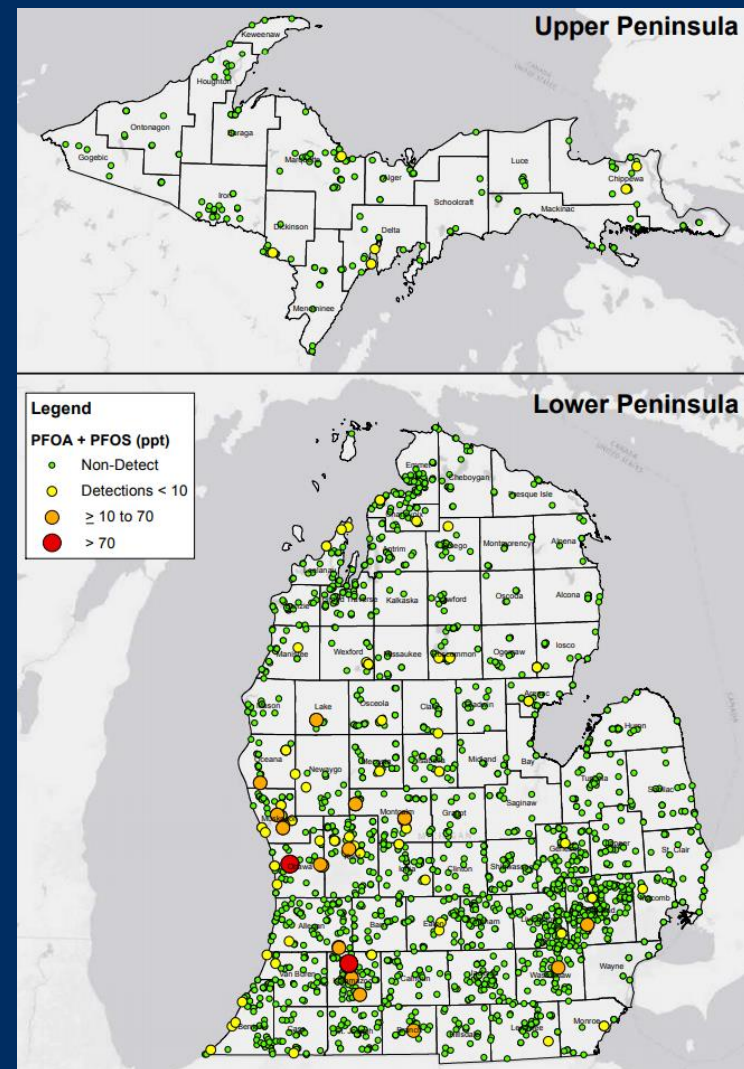
- 2006 – PFOS added to List of Toxic Substances
- 2009 – PFOS added to Virtual Elimination List
- 2012 – PFOS, PFOA, and long chain PFCAs included in Prohibition of Certain Toxic Chemicals regulations
- 2018 – further restrictions on PFOS, PFOA, and long chain PFCAs
- 2018 – Health Canada sets drinking water screening levels for PFOS, PFOA, and 7 other PFAS
- 2019 – Health Canada sets soil screening levels and drinking water guidelines
- 2019 – BC adds PFOS to standards for soil and groundwater
- Ontario considering standards, but have not released any

# What's Happening with PFAS Elsewhere?

Drinking Water  
(either groundwater  
or surface water)



Wastewater



Source: Phys.org



# How are Metal Finishers Dealing with PFAS?

## Wastewater

1. Remove any products containing PFAS from process
2. Clean tanks, pipes, and wastewater treatment systems
3. Replace tanks
4. Change to closed loop system (eliminate discharge)
5. Discharge treatment



# How are Metal Finishers Dealing with PFAS?

Legacy issues related to past releases to groundwater or surface water

1. Investigation to delineate problem
2. Alternate water supply or POS treatment
3. Remediation

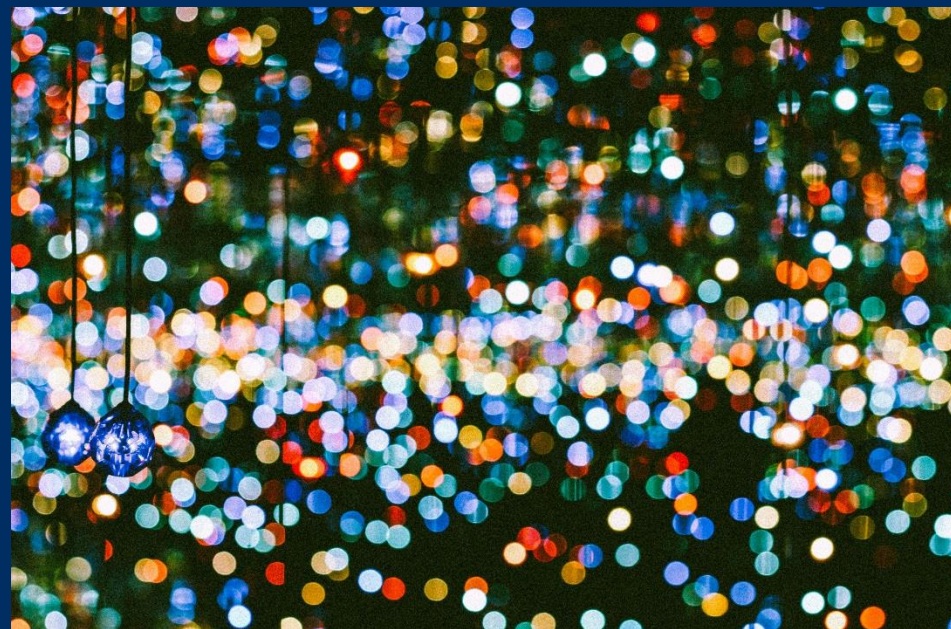


# PFAS Treatment

Granular Activated Carbon

Ion Exchange

Reverse Osmosis





## Other PFAS Considerations

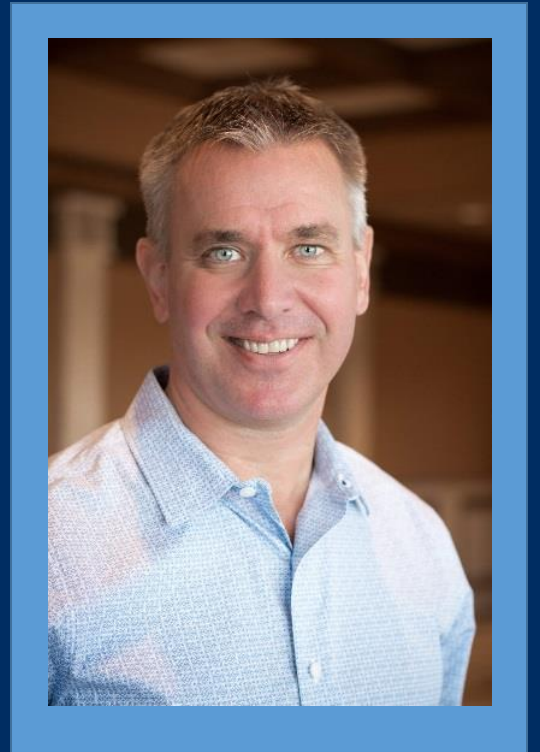
- Replacement PFAS compounds
- Liability related to WWTPs
- Potential liability related to air discharges

# Thank you!

If you want to be informed, sign up for our newsletters at [dragun.com](http://dragun.com) or [dragun.ca](http://dragun.ca) or contact Alan Hahn [ahahn@dragun.com](mailto:ahahn@dragun.com)

If you would like to learn more about Dragun including our Peer Review Services see <http://bit.ly/DragunPeerReview>.

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