

Bottom Line Up Front

- **What are we talking about:** a family of man-made chemicals known as PFAS or PFCs
- **Which sectors should pay attention:** water/wastewater treatment plants, municipalities, agriculture, aviation activities, fire suppression, industrial and consumer applications
- **Why are we talking about PFAS:**
 - Widespread occurrence and increasing numbers
 - Numerous exposures and bioaccumulates
 - Increased Federal and state-level regulation and potential for tort liability
 - Human health implications resulting in client risk exposure
 - Funding for remediation of drinking water sources – expensive, difficult, long duration

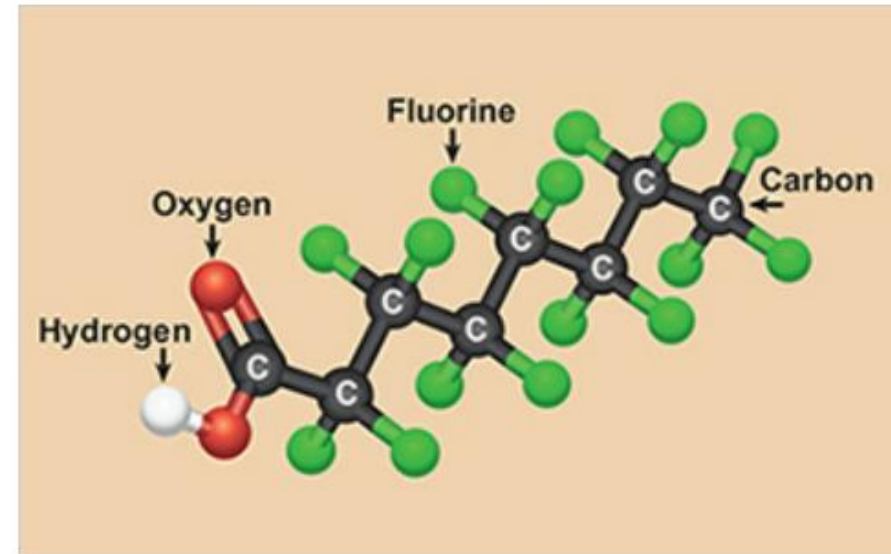
Definitions and Terms

- PFCs: perfluorinated chemicals
- PFASs: per- and polyfluoroalkyl substances
- PFOA aka “C8”: perfluorooctanoic acid
- PFOS: perfluorooctane sulfonate
- Ppt: parts per trillion

What is PFAS?

- A complex group of manufactured chemicals used in various everyday products:
 - Aviation, other Fire-fighting (surfactant blocks oxygen)
 - Non-stick food wrappings (FDA banned use in food wrapping 3 years ago)
 - Ski Wax
 - Stain resistant additive (carpeting, Scotchgard).
 - Water proofing (Gortex-no longer used)
 - Teflon nonstick cookware (Dupont discontinued Teflon production)
 - Various industrial uses

- PFAS molecules have a chain of linked carbon and fluorine atoms. Because the carbon-fluorine bond is one of the strongest, these chemicals do not degrade easily in the environment.



PFOA, also known as C8, has 8 carbons.

PFAS Emergence Timeline



https://pfas-1.itrcweb.org/wp-content/uploads/2022/09/HistoryandUse_PFAS_Fact-Sheet_090722_508.pdf

★ 2016- EPA 1st PFAS Drinking Water Advisory

- Graphic provides general indication of PFAS emergence and awareness by decade. “Reductions/alternatives” refers to reduction in production/use and includes other PFAS that have replaced legacy chemistry

Why Is There Liability Risk:

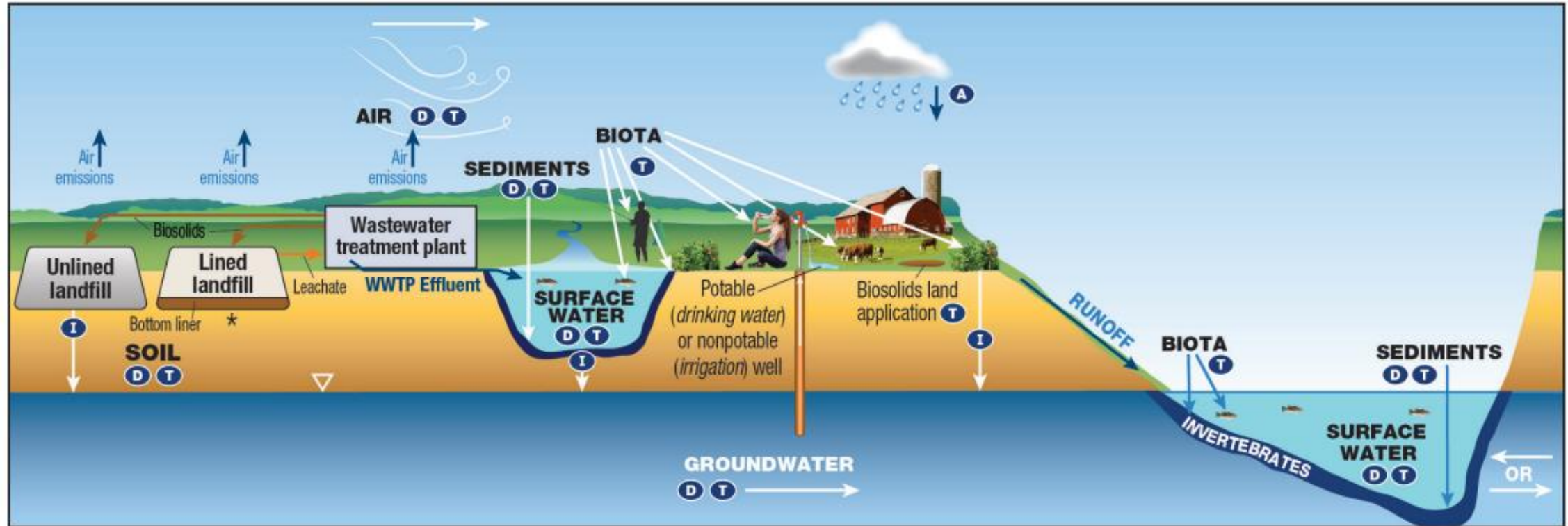
- Some PFAS have been linked to health effects in contaminated drinking water

Animal	Human (possible links)
Liver effects	Liver effects (serum enzymes/bilirubin, cholesterol)
Immunological effects	Immunological effects (decreased vaccination response, asthma)
Developmental effects	Developmental effects (birth weight)
Endocrine effects (thyroid)	Endocrine effects (thyroid disease)
Reproductive effects	Reproductive effects (decreased fertility)
Hematological (blood) effects	Cardiovascular effects (pregnancy induced hypertension)
Neurobehavioral effects	
Tumors (liver, testicular*, pancreatic*)	Cancer* (testicular, kidney)

**PFOA Only*

https://pfas-1.itrcweb.org/wp-content/uploads/2022/09/HH_Eco_PFAS_Fact-Sheet_082422_508.pdf

PFAS: Cradle to Grave (Wastewater Treatment Plant/Landfill Example)



*Leachate release from lined landfills could occur in the event of a liner leak

Source: https://pfas-1.itrcweb.org/fact_sheets_page/PFASFact_Sheet_Fate_and_Transport_April2020.pdf

KEY **A** Atmospheric Deposition **D** Diffusion/Dispersion/Advection **I** Infiltration **T** Transformation of precursors (abiotic/biotic)

Governmental Tort Liability Exposure

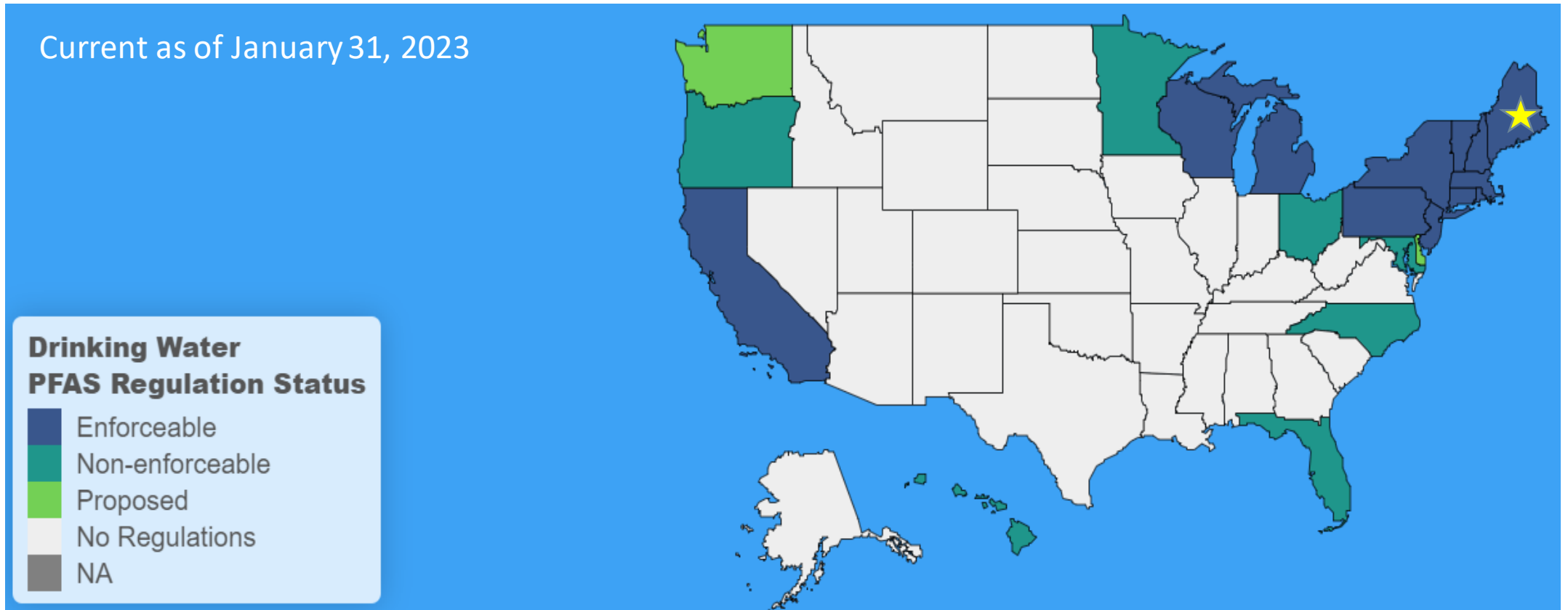
- Sovereign Immunity
- Waivers of Sovereign Immunity
 - Negligence - yes
 - Strict Liability - no

Current Regulatory Environment

- EPA's weak and delayed response has resulted in significant State regulatory action
 - 2016 Drinking Water Health Advisory Level: 70 ppt
 - 2022 Drinking Water Health Advisory Level: 0.004 ppt (PFOA); 0.02 ppt (PFOS)
- Notwithstanding Federal preemption, CERCLA provides a floor for regulation. State regulation can be more restrictive than CERCLA.

Current Regulatory Environment - State

Current as of January 31, 2023



<https://www.integral-corp.com/our-services/pfas/>

★ Effective January 1, 2023, Maine instituted a prohibition on sale of carpets rugs and fabric treatment products containing intentionally added PFAS. A complete ban on products with intentionally added PFAS is effective January 1, 2030.

Major Litigation Results

- DUPONT TEFLON FACTORY WORKERS
- 3M SETTLEMENT WITH MINNESOTA

Environmental Insurance Considerations

	Commercial General Liability (CGL) pre-1980	Commercial General Liability (CGL) post-1980	Pollution Legal Liability (PLL)
Extent of Coverage	All risk	Exclude pollution conditions	Pollution Conditions Only
Term of Coverage	Occurrence: while policy is in effect, regardless of when discovered	Claims made: occurred while policy in effect AND reported during or within 60 days of policy termination	Claims made

- Bottom line: Current CGL policies are useless against PFAS liability.

Remediation & Clean-up

- Granulated Activated Charcoal (GAC) filters
- Resin
- Anion Exchange Resin (AER)
- On-going research and development into water treatment processes

Questions?
