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PFAS IN GROUNDWATER: STATE-BY-STATE REGULATIONS

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Nov 27, 2024

SUMMARY

In the absence of federal cleanup standards for per- and polyfluoroalkyl substances ("PFAS") in groundwater, several states have started the process of regulating PFAS in groundwater themselves. As a result, states have adopted a patchwork of regulations and guidance standards that present significant compliance challenges to impacted industries. This client alert explores the current landscape of state regulations regarding the advisory, notification, and cleanup levels for PFAS – typically perfluorooctane sulfonic acid ("PFOS") and perfluorooctanoic acid ("PFOA") – in groundwater.

FEDERAL REGULATIONS

In 2019, the United States Environmental Protection Agency ("EPA") issued interim recommendations to address groundwater contaminated with PFOA and PFOS, but that guidance was subsequently rescinded. Although EPA concluded that the interim recommendation "no longer reflects the best, currently available science," the fact sheet discussing the 2019 interim recommendations is still a helpful resource to understand how EPA was evaluating the issue at that time.

On April 10, 2024, EPA issued its long-anticipated National Primary Drinking Water Regulation ("NPDWR") establishing, among other things, Maximum Contaminant Levels ("MCLs") for certain PFAS substances in drinking water. As discussed in BCLP's client alert, the final rule establishes the following MCLs and MCLGs for six PFAS substances:

PFOA

- MCLs (enforceable) 4.0 ppt
- MCLGs (non-enforceable) 0 (Zero)

PFOS

- MCLs (enforceable) 4.0 ppt
- MCLGs (non-enforceable) 0 (Zero)

PFHxS

- MCLs (enforceable) 10 ppt
- MCLGs (non-enforceable) 10 ppt

PFNA

- MCLs (enforceable) 10 ppt
- MCLGs (non-enforceable) 10 ppt

HFPO-DA (known as GenX Chemicals)

- MCLs (enforceable) 10 ppt
- MCLGs (non-enforceable) 10 ppt

Mixtures containing two or more of these four PFAS substances: PFHxS, PFNA, HFPO-DA, and PFBS

- MCLs (enforceable) 1 (unitless), Hazard Index
- MCLGs (non-enforceable) 1 (unitless), Hazard Index

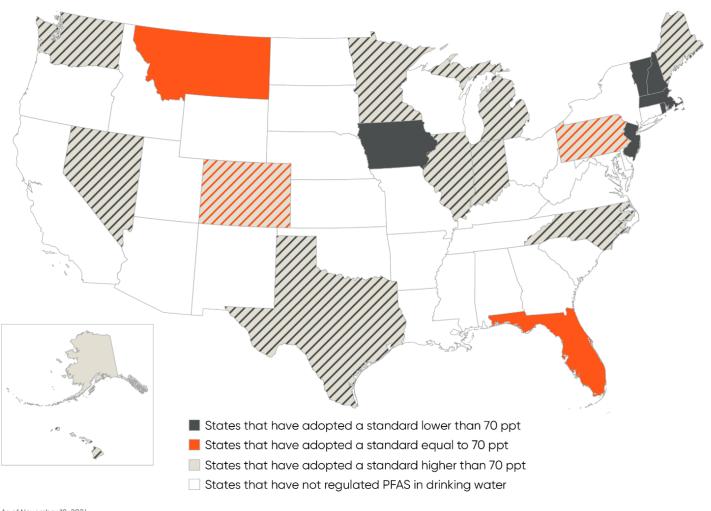
In most cases, EPA will probably use these MCLs to inform cleanup standards. Therefore, under the federal program, these values may have an impact on groundwater remediation dependent on site-specific factors.

STATE REGULATIONS

The snapshot provided below is current as of **November 18, 2024,** but it is important to note that this is a developing regulatory space. Some states, such as Florida, have indicated that they will revise groundwater regulations for various PFAS substances that may take effect soon.

Businesses should consider whether they currently use or discharge any PFAS compounds which may reach groundwater and evaluate if any state regulations apply, particularly if they operate in any of the jurisdictions listed below. In addition, owners of property with legacy PFAS use, and prospective purchasers of commercial and industrial properties, should review the most current groundwater quality standards as part of the due diligence process.

PFAS Groundwater Regulations



As of November 18, 2024

STATES THAT HAVE ADOPTED A STANDARD LOWER THAN 70 PPT

HAWAII

CONCENTRATION LEVEL

.004 ppt, etc.

Type of Regulation

PFOA and PFOS; 23 other PFAS substances (Advisory)

Hawaii has 25 PFAS regulations, including the following: PFDA (.0077 μ g/L); PFNA, HFPO-DA, and PFHxS (.01 μ g/L); PFUnDA (.019 μ g/L); PFDoDA and PFTrDA (.026 μ g/L); PFHpS and PFDS (.038

 μ g/L); PFOSA (.046 μ g/L); PFPrA (.051 μ g/L); PFHpA (.077 μ g/L); PFTeDA (0.26 μ g/L); PFPeS (0.62 μ g/L); ADONA (1.2 μ g/L); 6:2 FTS and PFPeA (1.5 μ g/L); PFHxA and 6:2 FTTAoS (1.9 μ g/L); PFBS (2.0 μ g/L); 8:2 FTOH (4.2 μ g/L); 6:2 FTOH (5.0 μ g/L); and PFBA (15 μ g/L).

Information

Environmental Action Levels (pg. 71)

ILLINOIS

CONCENTRATION LEVEL

2 ppt (stated by the Illinois Pollution Control Agency as 2 ng/L). There is a health-based guidance level of 0.6 ppt.

Type of Regulation

PFOA (Advisory)

Information

Regulation and related information

CONCENTRATION LEVEL

14 ppt (stated by the Illinois Pollution Control Agency as 14 ng/L)

Type of Regulation

PFOS (Advisory)

Information

Regulation and related information

CONCENTRATION LEVEL

21 ppt (stated by the Illinois Pollution Control Agency as 21 ng/L)

Type of Regulation

PFNA (Advisory)

Information

Regulation and related information

INDIANA

CONCENTRATION LEVEL

40 ppt (stated by the Indiana Department of Environmental Management as 0.04 μg/L)

Type of Regulation

PFOS (Advisory)

Information

Screening and closure level tables and related information

CONCENTRATION LEVEL

60 ppt (stated by the Indiana Department of Environmental Management as 0.06 μg/L)

Type of Regulation

PFOA and PFNA (Advisory)

Information

Screening and closure level tables and related information

IOWA

CONCENTRATION LEVEL

0.000014 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.000000014 mg/L)

Type of Regulation

PFDA (Advisory)

Information

Statewide Standards and related information

0.004 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.000004 mg/L)

Type of Regulation

PFOS and PFOA (Advisory)

Information

Statewide standards and related information

CONCENTRATION LEVEL

0.01 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.00001 mg/L)

Type of Regulation

PFHxS and PFNA (Advisory)

Information

Statewide standards and related information

CONCENTRATION LEVEL

2 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.002 mg/L)

Type of Regulation

PFBS (Advisory)

Information

Statewide standards and related information

CONCENTRATION LEVEL

3.5 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.0035 mg/L)

Type of Regulation

PFHxA (Advisory)

Information

Statewide standards and related information

CONCENTRATION LEVEL

7 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.007 mg/L)

Type of Regulation

PFBA (Advisory)

Information

Statewide standards and related information

MAINE

CONCENTRATION LEVEL

20 ppt

Type of Regulation

6 PFAS Substances combined: PFOS + PFOA + PFHpA + PFNA + PFHxS and PFDA (Advisory)

Information

Remedial Action Guidelines (pgs. 35-36) and related information

CONCENTRATION LEVEL

40 ppt (stated by the Maine Department of Environmental Protection as 0.04 μg/L)

Type of Regulation

PFOS (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 65) and related information

CONCENTRATION LEVEL

59 ppt (stated by the Maine Department of Environmental Protection as 0.059 µg/L)

Type of Regulation

PFNA (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 65) and related information

CONCENTRATION LEVEL

60 ppt (stated by the Maine Department of Environmental Protection as 0.06 μg/L)

Type of Regulation

PFOA (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 65) and related information

CONCENTRATION LEVEL

60 ppt (stated by the Maine Department of Environmental Protection as 0.06 µg/L)

Type of Regulation

HPFO-DA (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 63) and related information

MASSACHUSETTS

CONCENTRATION LEVEL

20 ppt (stated in the regulation as .02 ppb)		
Type of Regulation		
6 PFAS Substances combined: PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA (Clean Up)		
Information		
Regulation and related information		
MICHIGAN		
CONCENTRATION LEVEL		
6 ppt		
Type of Regulation		
PFNA (Clean Up)		
Information		
Regulation and related information		
CONCENTRATION LEVEL		
8 ppt		
Type of Regulation		
PFOA (Clean Up)		
Information		
Regulation and related information		
CONCENTRATION LEVEL		
16 ppt		
Type of Regulation		
PFOS (Clean Up)		
Information		

Regulation and related information

CONCENTRATION LEVEL

51 ppt

Type of Regulation

PFHxS (Clean Up)

Information

Regulation and related information

MINNESOTA

CONCENTRATION LEVEL

2.3 ppt (stated by the Minnesota Department of Health as 0.023 ppb)

Type of Regulation

PFOS (Advisory)

Information

Health Advisory Level and related information

CONCENTRATION LEVEL

35 ppt

Type of Regulation

PFOA (Advisory)

Information

Health Advisory Level (see page 181) and related information

CONCENTRATION LEVEL

47 ppt

Type of Regulation PFHxS (Advisory) Information Health Advisory Level (see page 180) and Related Information **NEW HAMPSHIRE CONCENTRATION LEVEL** 11 ppt **Type of Regulation** PFNA (Clean Up) Information Regulation and related information **CONCENTRATION LEVEL** 12 ppt **Type of Regulation** PFOA (Clean Up) Information Regulation and related information **CONCENTRATION LEVEL** 15 ppt **Type of Regulation** PFOS (Clean Up) Information

Regulation and related information

CONCENTRATION LEVEL 18 ppt **Type of Regulation** PFHxS (Clean Up) Information Regulation and related information **NEW JERSEY CONCENTRATION LEVEL** 2 ppt (stated by the regulation as $0.002 \mu g/L$) **Type of Regulation** Chloroperfluoropolyether carbonates^[1] (Clean Up) Information Interim Specific Groundwater Quality Criterion and related information CONCENTRATION LEVEL 13 ppt Type of Regulation PFNA and PFOS (Clean Up) Information Regulation and related information **CONCENTRATION LEVEL** 14 ppt

Type of Regulation

Type of Regulation HFPO-DA or Gen X (Clean Up) Information Interim Specific Ground Water Quality Criterion and related information **NEVADA** CONCENTRATION LEVEL 66.7 ppt (stated in the regulation as 0.0667 μ g/L) **Type of Regulation** PFSA (Advisory) Information Basic Comparison Levels and related information **NORTH CAROLINA** CONCENTRATION LEVEL 0.001 ppt (stated by North Carolina Environmental Quality as 0.001 ng/L) Type of Regulation PFOA (Clean Up) Information Interim Maximum Allowable Concentration and related information

PFOA (Clean Up)

Regulation and related information

20 ppt (stated in the regulation as .02 µg/L)

CONCENTRATION LEVEL

Information

CONCENTRATION LEVEL

0.7 ppt (stated by North Carolina Environmental Quality as 0.7 ng/L)

Type of Regulation

PFOS (Clean Up)

Information

Interim Maximum Allowable Concentration and related information

CONCENTRATION LEVEL

10 ppt (stated by North Carolina Environmental Quality as 10 ng/L)

Type of Regulation

HFPO-DA, PFNA, PFHxS (Clean Up)

Information

Interim Maximum Allowable Concentration and related information

RHODE ISLAND

CONCENTRATION LEVEL

20 ppt (stated in the regulation as 20 ng/L)

Type of Regulation

6 PFAS Substances combined: PFOS, PFOA, PFNA, PFDA, PFHxS, PFHpA (Notification)

Information

Groundwater Quality Rules and related information

TEXAS

CONCENTRATION LEVEL

29 ppt, etc. (stated by the Texas Commission of Environmental Quality as 0.029 mg/L)

Type of Regulation

PFOA; 16 Different PFAS Substances (Clean Up)

Texas has 16 regulations, including the following: PFHxS (9.3 ppt); PFOA, PFNA, PFDS, PFUndA, PFOSA, PFTrDA, PFTeA, and PFDoA (29 ppt); PFDA (37 ppt); PFOS and PFHpA (56 ppt); PFHxA and PFPeA (1,200 ppt); PFBA (2,400 ppt); and PFBS (3,400 ppt).

Information

Protective Concentration Levels (see May 2023 Tier 1 PCL Table)

VERMONT

CONCENTRATION LEVEL

20 ppt (stated in the regulation as $.02 \mu g/L$)

Type of Regulation

5 PFAS substances combined: PFHpA, PFHxS, PFNA, PFOS and PFOA (Notification)

Information

Regulation and related information

WASHINGTON

CONCENTRATION LEVEL

9 ppt (stated by the Washington Department of Ecology as 9 ng/L)

Type of Regulation

PFNA (Advisory)

Information

Related information

CONCENTRATION LEVEL

10 ppt (stated by the Washington Department of Ecology as 10 ng/L)

Type of Regulation
PFOA (Advisory)
Information
Related information
CONCENTRATION LEVEL
15 ppt (stated by the Washington Department of Ecology as 15 ng/L)
Type of Regulation
PFOS (Advisory)
Information
Related information
CONCENTRATION LEVEL
24 ppt (stated by the Washington Department of Ecology as 24 ng/L)
Type of Regulation
HFPO-DA or GenX (Advisory)
Information
Related information
CONCENTRATION LEVEL
65 ppt (stated by the Washington Department of Ecology as 65 ng/L)
Type of Regulation
PFHxS (Advisory)
Information
Related information

COLORADO

CONCENTRATION LEVEL

70 ppt

Type of Regulation

Site-specific Standard for PFOA and PFOS (Clean Up)

Information

Site-Specific Groundwater Quality Standard (pg. 12)

CONCENTRATION LEVEL

70 ppt (stated in the regulation as 70 ng/L)

Type of Regulation

3 PFAS substances combined: PFOS, PFOA, and PFNA (Guidance)

Information

Translation Level

Related Information

FLORIDA

CONCENTRATION LEVEL

70 ppt

Type of Regulation

PFOS and PFOA combined (Advisory)

Information

PFAS Dynamic Plan (pg. 9)

MONTANA

CONCENTRATION LEVEL

70 ppt

Type of Regulation

PFOS and PFOA combined (Potential Clean Up)

Information

Numeric Water Quality Standard (pg. 60) and related information

PENNSYLVANIA

CONCENTRATION LEVEL

70 ppt

Type of Regulation

PFOS and PFOA combined (Potential Clean Up)

Information

Medium Specific Concentration Cleanup Standards and related information

STATES THAT HAVE ADOPTED A STANDARD HIGHER THAN 70 PPT

ALASKA

CONCENTRATION LEVEL

400 ppt (stated in the regulation as $0.4 \mu g/L$)

Type of Regulation

PFOA and PFOS separately (Clean Up)

Information

Regulation (18 AAC 75) and related information

COLORADO

CONCENTRATION LEVEL

700 ppt (stated in the regulation as 700 ng/L)

Type of Regulation

PFHxS (Guidance)

Information

Translation Level

Related Information

CONCENTRATION LEVEL

400,000 ppt (stated in the regulation as 400,000 ng/L)

Type of Regulation

PFBS (Guidance)

Information

Translation Level and Related Information

ILLINOIS

CONCENTRATION LEVEL

140 ppt (stated by the Illinois Pollution Control Agency as 140 ng/L)

Type of Regulation

PFHxS (Advisory)

Information

Regulation and related information

CONCENTRATION LEVEL

2,100 ppt (stated by the Illinois Pollution Control Agency as 2,100 ng/L)

Type of Regulation

PFBS (Advisory)

Information

Regulation and related information

CONCENTRATION LEVEL

3,500 ppt (stated by the Illinois Pollution Control Agency as 3,500 ng/L)

Type of Regulation

PFHxA (Advisory)

Information

Regulation and related information

CONCENTRATION LEVEL

7,000 ppt (stated by the Illinois Pollution Control Agency as 7,000 ng/L)

Type of Regulation

PFBA (Advisory)

Information

Regulation and related information

INDIANA

CONCENTRATION LEVEL

400 ppt (stated by the Indiana Department of Environmental Management as 0.4 µg/L)

Type of Regulation

PFHxS (Advisory)

Information

Screening and closure level tables and related information

CONCENTRATION LEVEL

1,000 ppt (stated by the Indiana Department of Environmental Management as 1 µg/L)

Type of Regulation

PFDoDA (Advisory)

Information

Screening and closure level tables and related information

CONCENTRATION LEVEL

6,000 ppt (stated by the Indiana Department of Environmental Management as 6 µg/L)

Type of Regulation

PFUDA and PFBS (Advisory)

Information

Screening and closure level tables and related information

CONCENTRATION LEVEL

10,000 ppt (stated by the Indiana Department of Environmental Management as 10 µg/L)

Type of Regulation

PFHxA and PFPrA (Advisory)

Information

Screening and closure level tables and related information

CONCENTRATION LEVEL

20,000 ppt (stated by the Indiana Department of Environmental Management as 20 µg/L)

Type of Regulation

PFTeTA and PFBA (Advisory)

Information

Screening and closure level tables and related information

CONCENTRATION LEVEL

800,000 ppt (stated by the Indiana Department of Environmental Management as 800 µg/L)

Type of Regulation

PFODA (Advisory)

Information

Screening and closure level tables and related information

IOWA

CONCENTRATION LEVEL

7,000 ppt for protected groundwater sources (stated by the Iowa Department of Natural Resources as 0.007 mg/L)

Type of Regulation

PFBA (Advisory)

Information

Statewide Standards and related information

MAINE

CONCENTRATION LEVEL

390 ppt (stated by the Maine Department of Environmental Protection as 0.39 µg/L)

Type of Regulation

PFHxS (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 65) and related information

CONCENTRATION LEVEL

6,000 ppt (stated by the Maine Department of Environmental Protection as 6 µg/L)

Type of Regulation

PFBS (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines and related information

CONCENTRATION LEVEL

9,900 ppt (stated by the Maine Department of Environmental Protection as 9.9 µg/L)

Type of Regulation

PFHxA (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 65) and related information

CONCENTRATION LEVEL

19,000 ppt (stated by the Maine Department of Environmental Protection as 19 µg/L)

Type of Regulation

PFBA (Advisory)

Note: Maine has both residential and construction standards

Information

Remedial Action Guidelines (pg. 65) and related information

MICHIGAN CONCENTRATION LEVEL 370 ppt **Type of Regulation** HFPO-DA (Clean Up) Information Regulation and related information **CONCENTRATION LEVEL** 420 ppt **Type of Regulation** PFBS (Clean Up) Information Regulation and related information **CONCENTRATION LEVEL** 400,000 ppt **Type of Regulation** PFHxA (Clean Up) Information Regulation and related information

MINNESOTA

CONCENTRATION LEVEL

2,000 ppt Type of Regulation PFBS (Advisory) Information Health Advisory Level (see pg. 180) and related information **CONCENTRATION LEVEL** 7,000 ppt **Type of Regulation** PFBA (Advisory) Information Health Advisory Level (see pg. 180) and related information **NEVADA CONCENTRATION LEVEL** 100 ppt (stated in the regulation as $0.1 \mu g/L$) **Type of Regulation** PFOA (Advisory) Information Basic Comparison Levels and related information **CONCENTRATION LEVEL** 10,000 ppt (stated in the regulation as 10 μ g/L)

Type of Regulation

PFBS (Advisory)

Information

NORTH CAROLINA

CONCENTRATION LEVEL

2,000 ppt (stated by North Carolina Environmental Quality as 2,000 ng/L)

Type of Regulation

PFBS (Clean Up)

Information

Interim Maximum Allowable Concentration and related information

CONCENTRATION LEVEL

4,000 ppt (stated by North Carolina Environmental Quality as 4,000 ng/L)

Type of Regulation

PFHxA (Clean Up)

Information

Interim Maximum Allowable Concentration and related information

CONCENTRATION LEVEL

7,000 ppt (stated by North Carolina Environmental Quality as 7,000 ng/L)

Type of Regulation

PFBA (Clean Up)

Information

Interim Maximum Allowable Concentration and related information

PENNSYLVANIA

CONCENTRATION LEVEL

Information
Medium-Specific Concentration Standards and related information
CONCENTRATION LEVEL
29,000 ppt (stated in the regulation as 29 $\mu g/L$)
Type of Regulation
PFBS Non-residential Property (Clean Up)
Information
Medium-Specific Concentration Standards and related information
WASHINGTON
CONCENTRATION LEVEL
345 ppt (stated by the Washington Department of Ecology as 345 ng/L)
Type of Regulation
PFBS (Advisory)
Information
Related information
RELATED INFORMATION
STATES WITH NO PFAS GROUNDWATER REGULATIONS*

10,000 ppt (stated in the regulation as 10 $\mu g/L$)

PFBS Residential Property (Clean Up)

Type of Regulation

*at date of publication

 Arizona 	
 Arkansas 	
- California	
- Connecticut	
 Delaware 	
- Georgia	
- Idaho	
 Kansas 	
 Kentucky 	
 Louisiana 	
 Maryland 	
 Mississippi 	
- Missouri	
 Nebraska 	
New Mexico	
New York	
North Dakota	
- Ohio	
 Oklahoma 	
 Oregon 	
South Carolina	

Alabama

South Dakota

Tennessee

- Utah
- Virginia
- West Virginia
- Wisconsin
- Wyoming

KEY

NOTIFICATION

A corporate representative must inform the appropriate state official that the groundwater is above the stated limit.

ADVISORY

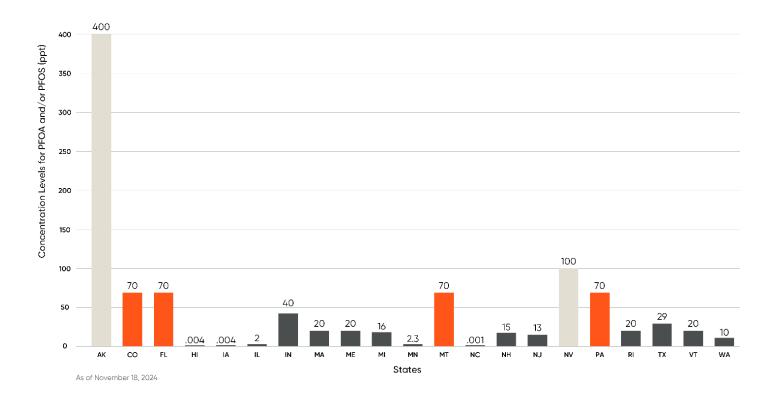
These levels are not binding limits, but they can serve as the basis for regulatory action, and are a useful tool for due diligence and risk assessment.

CLEAN UP

Investigation and remediation is usually required when concentration levels exceed the clean up threshold. This is usually expressed by groundwater quality standards that identify specific clean up criteria.

ADDITIONAL INFORMATION

One of the most striking features of the regulatory landscape for PFAS in groundwater is the wide range of regulatory concentration levels. For example, for PFAS substances in groundwater, one of the most stringent concentration limits is 0.000014 ppt (lowa; PFDA only), and one of the most lenient concentration limits is 800,000 ppt (Indiana; PFOSA only). The following chart demonstrates that even for PFOA and PFOS, which have been more extensively studied and regulated than other PFAS compounds, there is still a wide discrepancy in the values that different states have adopted.



CONCLUSION

Businesses operating in the states where groundwater regulations have already been enacted should consider whether they currently use or discharge any of the regulated PFAS compounds. In addition, owners of property with legacy PFAS use, and prospective purchasers of commercial and industrial properties in these jurisdictions will increasingly need to incorporate the groundwater quality standards into their due diligence processes.

For more information on PFAS chemicals, and the regulatory and litigation risks that they pose, please visit our PFAS webpage. If you have a question about how to manage PFAS risk in any jurisdiction, contact Tom Lee, Bryan Keyt, Erin Brooks, John Kindschuh, or any other member of our PFAS team at BCLP.

RELATED CAPABILITIES

- PFAS
- Environment

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