

PFAS UPDATE: STATE SOIL CONCENTRATION REGULATIONS, JULY 2023

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This blog was originally published in July 2023. [Visit our up-to-date blog on PFAS in soil: state regulations >](#)

In the absence of binding federal standards for per- and polyfluoroalkyl substances (“PFAS”) in soil, several states have started the process of regulating PFAS in soil themselves. These regulations have implications for site investigations as well as remediation decisions. This client alert explores the current landscape of state regulations regarding the guidance, notification, and clean up levels for PFAS – most commonly perfluorooctane sulfonic acid (“PFOS”) and perfluorooctanoic acid (“PFOA”) – in soil.

FEDERAL REGIONAL SCREENING LEVELS

The United States Protection Agency (“EPA”) has issued [Regional Screening Levels \(“RSLs”\)](#) for six PFAS substances. RSLs are advisory levels and are not legally binding, but both EPA and state agencies often use RSLs to investigate and characterize potential remediation sites.

PFOS

RESIDENTIAL SOIL LEVEL (MG/KG)

0.13

INDUSTRIAL SOIL LEVEL (MG/KG)

1.6

PFOA

RESIDENTIAL SOIL LEVEL (MG/KG)

0.19

INDUSTRIAL SOIL LEVEL (MG/KG)

2.5

HFPO-DA

RESIDENTIAL SOIL LEVEL (MG/KG)

0.23

INDUSTRIAL SOIL LEVEL (MG/KG)

3.5

PFBS

RESIDENTIAL SOIL LEVEL (MG/KG)

19

INDUSTRIAL SOIL LEVEL (MG/KG)

2,500

PFHXS

RESIDENTIAL SOIL LEVEL (MG/KG)

1.3

INDUSTRIAL SOIL LEVEL (MG/KG)

16

PFNA

RESIDENTIAL SOIL LEVEL (MG/KG)

0.19

INDUSTRIAL SOIL LEVEL (MG/KG)

STATE REGULATIONS

The information provided below is current as of **July 24, 2023**, but it is important to note that this is a developing regulatory space. For example, [Florida](#) and [New Hampshire](#) have enacted legislation which requires their environmental agencies to establish and/or revise soil regulations for various PFAS substances, but those new standards have not been issued, and other states are in the process of passing new laws on this topic, so the regulatory landscape will continue to change over the next several months.

ALASKA

CONCENTRATION LEVEL

PFOA and PFOS

- Arctic zone: 2.2 mg/kg
- Under 40 inch zone: 1.6 mg/kg
- Over 40 inch zone: 1.3 mg/kg

TYPE OF REGULATION

Clean up

INFORMATION

[Regulation](#) (See 18 AAC 75, Table B-1)

CALIFORNIA

CONCENTRATION LEVEL

PFOA

- Resident non-cancer hazard: .028 mg/kg
- Commercial/industrial non-cancer hazard: .37 mg/kg
- Construction worker non-cancer hazard: .086 mg/kg

PFOS

- Resident non-cancer hazard: .11 mg/kg
- Commercial/industrial nonconcern hazard: 1.5 mg/kg
- Construction worker non-cancer hazard: .34 mg/kg

Note: There are also cancer risk standards for all of these categories

TYPE OF REGULATION

Screening level advisory

INFORMATION

[California water boards interim final environmental screening levels](#) (see pg. 12)

CONNECTICUT

CONCENTRATION LEVEL

PFOA + PFOS + PFNA + PFHxS + PFHpA = 1.35 mg/kg

TYPE OF REGULATION

Clean up

INFORMATION

[Remediation standard regulations, residential direct exposure criteria \(Table 2\)](#)

DELAWARE

CONCENTRATION LEVEL

PFOS and PFOA: 1.3 mg/kg

TYPE OF REGULATION

Notification

INFORMATION

[Hazardous Substance Cleanup Act Reporting Level table \(see table, page 9\)](#)

FLORIDA

CONCENTRATION LEVEL

PFOS and PFOA

- Residential: 1.3 mg/kg
- Commercial/industrial: 25 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[PFAS Dynamic Plan](#) (see page 9) and [related information](#)

HAWAII

CONCENTRATION LEVEL

PFOS and PFOA

- .025 mg/kg
- 16 other substances (Hawaii has regulated soil concentrations for 16 additional PFAS compounds: PFDA (.0025 mg/kg); PFNA (.0028 mg/kg); PFUnDA (.0063 mg/kg); PFDoDA and PFTTrDA (.0084 mg/kg); PFHxS (.012 mg/kg); PFHpS and PFDS (.013 mg/kg); PFOSA (.015 mg/kg); PFHpA (.025 mg/kg); PFTeDA (.084 mg/kg); HFPO-DA (.1 mg/kg); PFPeA (.51 mg/kg); PFHxA (2.5 mg/kg); PFBA (4.8 mg/kg); and PFBS (250 mg/kg))

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Environmental Action Levels](#) (see table A-1)

INDIANA

CONCENTRATION LEVEL

PFOS

- 3 mg/kg

PFOA and PFNA

- 5 mg/kg

PFHxS

- 30 mg/kg

PFBS

- 500 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

Standard exposure levels

IOWA

CONCENTRATION LEVEL

PFOS

- 0.00048 mg/kg

PFNA

- .18 mg/kg

PFHxS

- 1.6 mg/kg

PFBS

- 18 mg/kg

PFOA

- 35 mg/kg

PFHxA

- 39 mg/kg

PFBA

- 61 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

Statewide standards

MAINE

CONCENTRATION LEVEL

PFOS and PFOA

- Residential: 1.7 mg/kg
- Commercial worker: 22 mg/kg
- Construction worker: 5.1 mg/kg

PFBS

- Residential: 1,700 mg/kg
- Commercial worker: 22,000 mg/kg
- Construction worker: 51,000 mg/kg

Note: other standards are listed, such as leaching, park user, or recreator sediment

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Remedial Action Guidelines](#) (pg. 46)

MASSACHUSETTS

CONCENTRATION LEVEL

- .3 mg/kg (stated in the regulation as .3 ppm)
- 6 PFAS substances combined: PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA for SW-1
- Note: the concentration level depends on the soil classification designation

TYPE OF REGULATION

Clean up

INFORMATION

[Regulation](#) (see Table 5) and [Mass DEP related information](#)

MICHIGAN

CONCENTRATION LEVEL

PFOS

- 0.22 ug/kg

PFOA

- 350 ug/kg

TYPE OF REGULATION

Clean up

INFORMATION

[Regulation](#)

MINNESOTA

CONCENTRATION LEVEL

PFOS (stated in the blueprint in ng/g)

- Residential: .041 mg/kg
- Non-residential: .56 mg/kg

PFHxS

- Residential: .13 mg/kg
- Non-residential: 1.7 mg/kg

PFOA

- Residential: .24 mg/kg
- Non-residential: 3.2 mg/kg

PFBA

- Residential: 38 mg/kg
- Non-residential: 520 mg/kg

PFBS

- Residential: 57 mg/kg
- Non-residential: 77 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[PFAS Blueprint](#) (see pgs. 180-182)

NEBRASKA

CONCENTRATION LEVEL

PFOA

- Residential: .32 mg/kg
- Industrial: 1.5 mg/kg

PFOS

- Residential: 3.2 mg/kg
- Industrial: 150 mg/kg

Note: This is for the Voluntary Cleanup Program only

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Regulation](#) (see table A-1)

NEVADA

CONCENTRATION LEVEL

PFOA:

- Residential: 2.35 mg/kg
- Indoor industrial/commercial worker: 70.1 mg/kg
- Outdoor industrial/commercial worker: 78.9 mg/kg

PFOS:

- Residential: 1.56 mg/kg
- Indoor industrial/commercial worker: 46.7 mg/kg
- Outdoor industrial/commercial worker: 26 mg/kg

PFBS

- Residential: 19 mg/kg
- Indoor industrial/commercial worker: 701 mg/kg
- Outdoor industrial/commercial worker: 274 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Basic comparison levels](#)

NEW HAMPSHIRE

CONCENTRATION LEVEL

PFOS

- Residential: 0.1 mg/kg
- Non-residential: 0.6 mg/kg

PFHxS and PFNA

- Residential: 0.1 mg/kg
- Non-residential: 0.9 mg/kg

PFOA

- Residential: 0.2 mg/kg
- Non-residential: 1.3 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

Environmental Health Program direct contact risk-based soil concentrations

NEW JERSEY

CONCENTRATION LEVEL

PFNA

- Residential: .047 mg/kg
- Non-residential: .67 mg/kg

PFOS

- Residential: .11 mg/kg
- Non-residential: 1.6 mg/kg

PFOA

- Residential: .13 mg/kg
- Non-residential: 1.8 mg/kg

GenX

- Residential: .23 mg/kg

- Non-residential: 3.9 mg/kg

TYPE OF REGULATION

Clean up

INFORMATION

[Interim soil remediation standards and NJDEP related information](#)

NEW MEXICO

CONCENTRATION LEVEL

PFOS, PFOA, and PFHxS

- Residential: 1.56 mg/kg
- Industrial/occupational: 260 mg/kg
- Construction worker: 7.08 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Soil Screening Guidance for Human Health Risk Assessments \(see Table 5-3\)](#)

NEW YORK

CONCENTRATION LEVEL

PFOA (stated in the document in ppb)

- Residential: .0066 mg/kg
- Commercial: .5 mg/kg
- Industrial: .6 mg/kg

PFOS

- Residential: .0088 mg/kg

- Commercial: .44 mg/kg
- Industrial: .44 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[New York Department of Environmental Conservation Sampling, Analysis, and Assessment of PFAS](#)
(see pg. 3)

NORTH CAROLINA

CONCENTRATION LEVEL

PFOS

- Residential: .025 mg/kg
- Industrial: .33 mg/kg

PFHxS

- Residential: .25 mg/kg
- Industrial: 3.3 mg/kg

PFOA

- Residential: .038 mg/kg
- Industrial: .49 mg/kg

PFNA

- Residential: .038 mg/kg
- Industrial: .49 mg/kg

Ammonium perfluoro-2-methyl-3-oxahexanoate

- Residential: .038 mg/kg
- Industrial: .49 mg/kg

HFPO-DA (GenX)

- Residential: .047 mg/kg
- Industrial: .7 mg/kg

PFBS

- Residential: 3.8 mg/kg
- Industrial: 49 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Preliminary Soil Remediation Goals](#)

PENNSYLVANIA

CONCENTRATION LEVEL

PFOA and PFOS

- Residential: 4.4 mg/kg
- Non-residential: 64 mg/kg

PFBS

- Residential: 66 mg/kg
- Non-residential: 960 mg/kg

TYPE OF REGULATION

Clean up

INFORMATION

[Regulation](#) and [related information](#)

TEXAS

CONCENTRATION LEVEL

PFOA

- .5 acre source area: .6 mg/kg
- 30 acre source area: .49 mg/kg

PFOS

- .5 acre source area: 1.5 mg/kg
- 30 acre source area: 1.5 mg/kg
- 16 different PFAS substances
 - Residential soil limits (not commercial) in Texas are as follows: PFOSA: .5 acre source area - .058 mg/kg and 30 acre source area: .031 mg/kg; PFHxS: .5 acre source area - .25 mg/kg and 30 acre source area - .24 mg/kg; PFPeA and PFHxA: .5 and 30 acre source area - .25 mg/kg; PFTeDA: .5 and 30 acre source area - .51 mg/kg; PFTrDA: .5 and 30 acre source area - .61 mg/kg; PFNA: .5 acre source area - .76 mg/kg and 30 acre source area: .73 mg/kg; PFDoA: .5 acre source area - .79 mg/kg and 30 acre source area - .78 mg/kg; PFDS and PFUnDA: .5 and 30 acre source area - .8 mg/kg; PFDA: .5 acre source area - .99 mg/kg and 30 acre source area - .98 mg/kg; PFHpA: .5 and 30 acre source area - 1.5 mg/kg; PFBA: .5 acre source area - 180 mg/kg and 30 acre source area - 160 mg/kg; PFBS: .5 acre source area - 860 mg/kg and 30 acre source area: 800 mg/kg.

TYPE OF REGULATION

Clean up

INFORMATION

[Protective Concentration Levels](#), see March 2022 tier 1 PCL table; residential (table 1) and commercial (table 2)

VERMONT

CONCENTRATION LEVEL

PFOS, PFOA, PFHpA, PFHxS, PFNA

- Residential: 1.22 mg/kg
- Non-residential: 14.36 mg/kg

TYPE OF REGULATION

Notification

INFORMATION

[Investigation and Remediation of Contaminated Properties Rule](#) (see Appendix A)

WASHINGTON

CONCENTRATION LEVEL

PFNA

- .2 mg/kg

PFOA

- .24 mg/kg

PFOS

- .24 mg/kg

HFPO-DA (GenX)

- .24 mg/kg

PFHxS

- .78 mg/kg

PFBS

- 24 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

WISCONSIN

CONCENTRATION LEVEL

PFOA and PFOS

- Residential: 1.26 mg/kg
- Industrial: 16.4 mg/kg

TYPE OF REGULATION

Clean up

INFORMATION

[Remedial Action Regulation and related Information](#)

NO ENACTED PFAS SOIL REGULATIONS

No enacted PFAS soil regulations (as of the date of publication):

- Alabama
- Arizona
- Arkansas
- Colorado
- Georgia
- Idaho
- Illinois
- Kansas
- Kentucky
- Louisiana
- Maryland

- Mississippi
- Missouri
- Montana
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Utah
- Virginia
- West Virginia
- Wyoming

Key

Notification: A corporate representative must inform the appropriate state official that the soil concentration is above the stated limit.

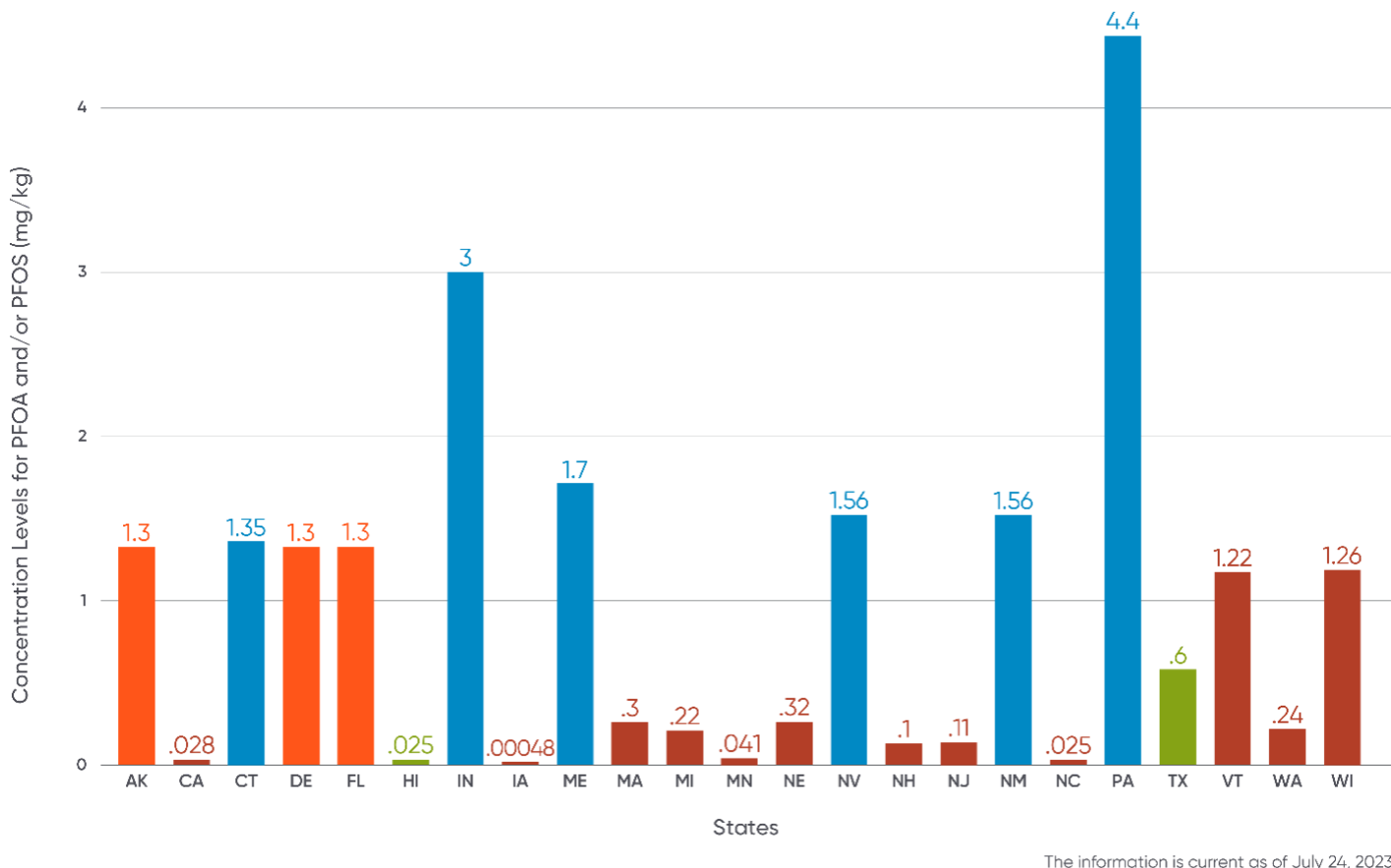
Screening level/advisory: These levels are not binding limits, but they can serve as the basis for regulatory action, and are a useful tool for due diligence and risk assessment.

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

ANALYSIS

Perhaps the most remarkable thing about the different state regulations regarding PFAS in soil is the wide range of regulated concentration levels. For example, Iowa regulates PFOS at 0.00048

mg/kg, while Pennsylvania regulates PFOS at 4.4 mg/kg for residential (64 mg/kg for non-residential). Some of these discrepancies are as a result of the differing compounds being regulated; as a result, the following chart illustrates the discrepancies only in the concentration levels for PFOA and/or PFOS.



Notably, there are substantial differences in the regulatory concentrations (sometimes measured by orders of magnitude) for the same compounds across the different states. This variably presents obvious diligence and compliance challenges for businesses that buy, sell, and operate properties across the country, and which may need to engage with regulators on future site investigation and remediation projects.

CONCLUSION

Businesses operating in the states where soil regulations have been enacted should consider whether they currently use or discharge any of the regulated PFAS compounds into the soil, or have done so in the past. In addition, prospective purchasers of commercial and industrial properties in these jurisdictions will increasingly need to incorporate the soil contamination standards as part of their due diligence processes in order to underwrite the potential risk of future regulatory action.

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, John Kindschuh, Emma Cormier, or any other member of our PFAS team at Bryan Cave Leighton Paisner LLP.

RELATED PRACTICE AREAS

- PFAS Team
- Environment

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