

PFAS IN SOIL: STATE REGULATIONS

UPDATED: DECEMBER 2023

Dec 04, 2023

SUMMARY

In the absence of enforceable 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 due diligence, site investigations, and remediation decisions. This client alert explores the current landscape of state regulations regarding the advisory, notification, and cleanup 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 numerous PFAS substances, and the levels for some of the most commonly used PFAS compounds are listed below. RSLs are advisory levels and are not enforceable limits, but both EPA and state agencies often use RSLs to investigate and characterize potential remediation sites.

PFOS

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

0.13

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

1.6

PFOA

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

0.19

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

2.5

PFNA

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

0.19

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

2.5

HFPO-DA OR "GENX"

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

0.23

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

3.5

PFHXS

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

1.3

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

160

PFBS

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

19

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

2,500

PFHXA

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

32

INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

410

PFBA

RESIDENTIAL SOIL LEVEL (MG/KG)^[1]

78

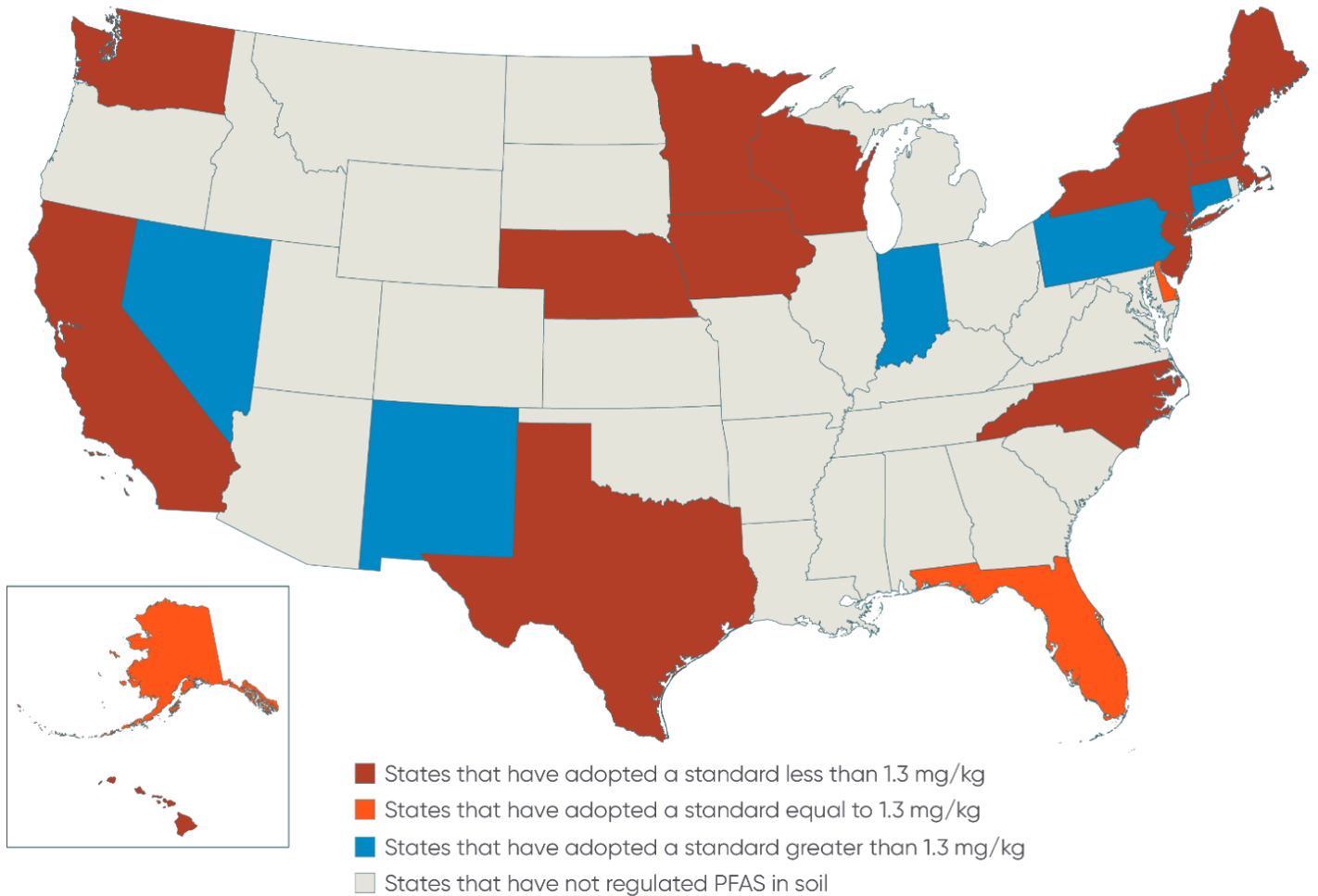
INDUSTRIAL SOIL LEVEL (MG/KG)^[2]

1,200

STATE REGULATIONS

The information provided below is current as of **November 29, 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 soil regulations for various PFAS substances, but those new standards have not been issued, so the regulatory landscape may change over the next several months. Additionally, there are a few proposed laws, in states such as [Maine](#) and [Massachusetts](#), that address PFAS soil permitting or remediation issues.

PFAS SOIL REGULATIONS



The information is current as of November 29, 2023

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: 0.028 mg/kg
- Commercial/industrial non-cancer hazard: 0.37 mg/kg
- Construction worker non-cancer hazard: 0.086 mg/kg

PFOS

- Resident non-cancer hazard: 0.11 mg/kg
- Commercial/industrial nonconcern hazard: 1.5 mg/kg
- Construction worker non-cancer hazard: 0.34 mg/kg

Note: There are also cancer risk standards for all three 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

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

- 0.025 mg/kg^[3]

TYPE OF REGULATION

Screening level/advisory

INFORMATION

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

[Related information](#)

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 scenarios](#)

[Related information](#)

IOWA

CONCENTRATION LEVEL

PFOS

- 0.00048 mg/kg

PFNA

- 0.18 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

PFOA

- Residential: 0.26 mg/kg
- Commercial worker: 3.4 mg/kg
- Construction worker: 0.77 mg/kg

PFOS

- Residential: 0.17 mg/kg
- Commercial worker: 2.2 mg/kg
- Construction worker: 0.51 mg/kg

PFBA

- Residential: 110 mg/kg
- Commercial worker: 1,600 mg/kg
- Construction worker: 2,000 mg/kg

PFBS

- Residential: 26 mg/kg
- Commercial worker: 340 mg/kg
- Construction worker: 230 mg/kg

PFHxS

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

PFHxA

- Residential: 43 mg/kg
- Commercial worker: 560 mg/kg
- Construction worker: 130 mg/kg

PFNA

- Residential: 0.26 mg/kg
- Commercial worker: 3.4 mg/kg
- Construction worker: 0.77 mg/kg

Note: There are three other categories listed, such as "Leaching to Groundwater," "Park User," and "Recreator Sediment"

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Remedial Action Guidelines](#) (pg. 48)

[Maine Department of Environmental Protection information](#)

MASSACHUSETTS

CONCENTRATION LEVEL

- 0.3 mg/kg (stated in the regulation as 0.3 ppm) for SW-1
- 6 PFAS substances combined: PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA
- Note: the concentration level depends on the soil classification designation

TYPE OF REGULATION

Clean up

INFORMATION

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

MINNESOTA

CONCENTRATION LEVEL

PFOS (stated in the blueprint in ng/g)

- Residential: 0.041 mg/kg
- Non-residential: 0.56 mg/kg

PFHxS

- Residential: 0.13 mg/kg

- Non-residential: 1.7 mg/kg

PFOA

- Residential: 0.24 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: 0.32 mg/kg
- Industrial: 1.5 mg/kg

PFOS

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

Note: This is only for the Voluntary Cleanup Program

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: 38.9 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: 0.047 mg/kg
- Non-residential: 0.67 mg/kg

PFOS

- Residential: 0.11 mg/kg
- Non-residential: 1.6 mg/kg

PFOA

- Residential: 0.13 mg/kg
- Non-residential: 1.8 mg/kg

HFPO-DA or GenX

- Residential: 0.23 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: 0.0066 mg/kg
- Commercial: 0.5 mg/kg
- Industrial: 0.6 mg/kg

PFOS

- Residential: 0.0088 mg/kg
- Commercial: 0.44 mg/kg
- Industrial: 0.44 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: 0.025 mg/kg
- Industrial: 0.33 mg/kg

PFHxS

- Residential: 0.25 mg/kg
- Industrial: 3.3 mg/kg

PFOA

- Residential: 0.038 mg/kg
- Industrial: 0.49 mg/kg

PFNA

- Residential: 0.038 mg/kg
- Industrial: 0.49 mg/kg

Ammonium perfluoro-2-methyl-3-oxahexanoate

- Residential: 0.038 mg/kg
- Industrial: 0.49 mg/kg

HFPO-DA (GenX)

- Residential: 0.047 mg/kg
- Industrial: 0.7 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

- 0.5 acre source area: 0.6 mg/kg
- 30 acre source area: 0.49 mg/kg

PFOS

- 0.5 acre source area: 1.5 mg/kg
- 30 acre source area: 1.5 mg/kg
- 16 different PFAS substances^[4]

TYPE OF REGULATION

Clean up

INFORMATION

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

VERMONT

CONCENTRATION LEVEL

PFOS

- Residential: 0.12 mg/kg
- Commercial: 1.4 mg/kg

PFOA

Residential: 0.18 mg/kg

Commercial: 2.2 mg/kg

PFNA

- Residential: 0.18 mg/kg
- Commercial: 2.2 mg/kg

PFHxS

- Residential: 1.12 mg/kg
- Commercial: 14 mg/kg

PFBS

- Residential: 18 mg/kg
- Commercial: 215 mg/kg

TYPE OF REGULATION

Screening Level/Advisory

INFORMATION

[Vermont Department of Health publication](#) (see Attachment 1)

WASHINGTON

CONCENTRATION LEVEL

PFNA

- 0.2 mg/kg

PFOA, PFOS, and HFPO-DA (GenX)

- 0.24 mg/kg

PFHxS

- 0.78 mg/kg

PFBS

- 24 mg/kg

PFHxA

- 40 mg/kg

PFBA

- 80 mg/kg

TYPE OF REGULATION

Screening level/advisory

INFORMATION

[Washington Department of Ecology Toxics Cleanup Program and related 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 Statute 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
- Michigan
- Mississippi
- Missouri
- Montana
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Utah
- Virginia

- West Virginia
- Wyoming

Key

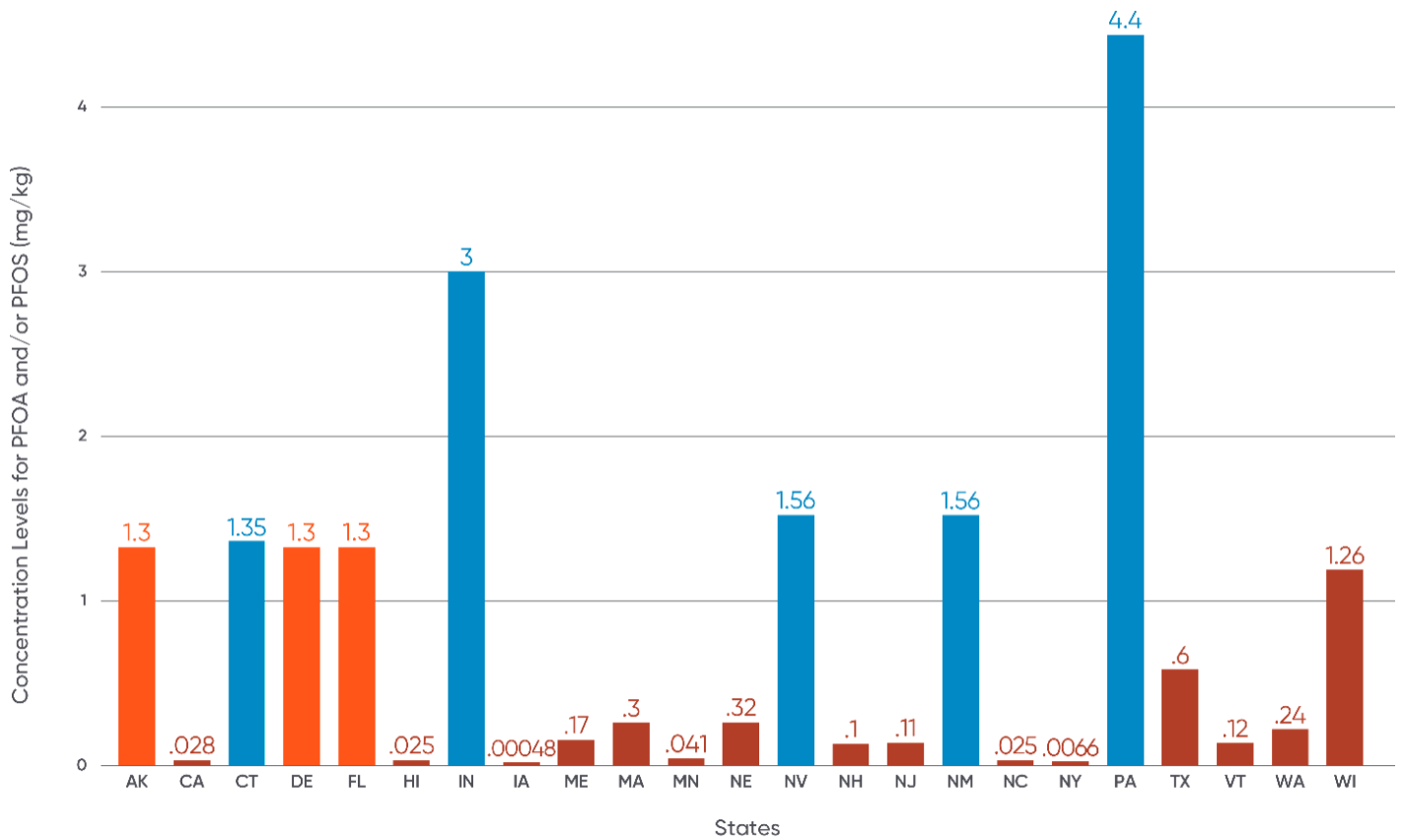
Notification: A corporate representative must inform the appropriate state official that the soil concentration is above the stated limit.

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.



The information is current as of November 29, 2023

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

FOOTNOTES

[1] See “Resident Soil” table

[2] See “Composite Worker Soil” table

[3] Hawaii has regulated 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))

[3] Residential soil limits (not commercial) in Texas are as follows: PFOSA: .5 acre source area – 0.058 mg/kg and 30 acre source area: 0.031 mg/kg; PFHxS: .5 acre source area – 0.25 mg/kg and 30 acre source area – 0.24 mg/kg; PFTeDA: 0.5 and 30 acre source area – 0.51 mg/kg; PFTTrDA: .5 and 30 acre source area – 0.61 mg/kg; PFNA: .5 acre source area – 0.76 mg/kg and 30 acre source area: 0.73 mg/kg;PFDoA: .5 acre source area – 0.79 mg/kg and 30 acre source area – 0.78 mg/kg; PFDS and PFUnDA: .5 and 30 acre source area – 0.8 mg/kg; PFDA: .5 acre source area – 0.99 mg/kg and 30 acre source area – 0.98 mg/kg; PFHpA: .5 and 30 acre source area – 1.5 mg/kg; PFPeA and PFHxA .5 and 30 acre source area – 33 mg/kg; PFBA: .5 acre source area – 61 mg/kg and 30 acre source area – 56 mg/kg; PFBS: .5 acre source area – 86 mg/kg and 30 acre source area: 80 mg/kg.

RELATED PRACTICE AREAS

- PFAS Team
- Environment

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