



DELAWARE DEPARTMENT OF
NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL

Question and Answer Document for the PFAS Policy May 30, 2023

The following are a list of questions and comments submitted by the Hazardous Substances Cleanup Act (HSCA) Advisory Committee (HAC) who responded to the draft Policy Update regarding per- and polyfluoroalkyl substances (PFAS). A total of ten separate response documents were submitted to the Department of Natural Resources and Environmental Control – Remediation Section (DNREC-RS). DNREC has read and reviewed the comments and questions (italics) and offer the following responses. Please note, some questions and comments were asked multiple times and the exact phrasing might be different. Some comments may not appear since they were answered in responses below. Also, the term ‘HSCA laws’ mentioned throughout the responses refer to both the Hazardous Substances Cleanup Act (7 Del. C. Chapter 91) and the HSCA Regulations (7 DE Admin. C. 1375).

On April 4, 2023, four additional PFAS compounds were added to the HSCA screening level table. In addition to Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) already being hazardous substances under HSCA, Perfluorobutanesulfonic acid (PFBS), Perfluorononanoic acid (PFNA), Perfluorohexanesulfonic acid (PFHxS), and Hexafluoropropylene oxide Dimer acid (HFPO-DA commonly called “GenX”) were the new PFAS compounds added. Some responses were updated to reflect the addition of four PFAS compounds to the hazardous substance list.

General Comments

- 1. Since the Draft Policy purports to apply to “the investigation of [all] per and poly fluoroalkyl substances” (which it defines as “PFAS”) at all sites subject to DNREC’s jurisdiction, yet not all PFAS are hazardous substances, the policy, as drafted, would appear to exceed DNREC’s authority. Accordingly, we request that DNREC revise the Draft Policy to clarify that it only establishes requirements only for those PFAS compounds that have been designated as hazardous substances.*

This policy applies to PFAS that are classified as hazardous substances under HSCA. Since the number of PFAS defined as hazardous under HSCA can change, the policy speaks to the class of chemicals for expedience. The HSCA laws are clear on what is required of a potential responsible party (PRP) to address hazardous substances(s) discovered within their property or facility. Moreover, if additional PFAS compounds become hazardous substances under HSCA, sampling for and reporting additional PFAS beyond those listed as hazardous will save time and money.

2. *A policy is intended to be more flexible than a regulation. DNREC's use of language such as "uniform" approach to PFAS as stated under the Statement of Purpose suggest there is little to no flexibility in the policy. If this is the direction DNREC is choosing, there should be a regulatory adoption process with a cost benefit analysis.*

A policy, by definition, reinforces existing statutes and regulations. The "uniform approach" stated in this policy seeks to include PFAS compounds that are classified as hazardous substances like any other chemical classified as such. PFOA and PFOS have been listed as hazardous substances under HSCA since 2015 and this PFAS policy has been in place since July 2, 2018. To date, only four non-State or Federally led PFAS investigations have been conducted under DNREC's regulatory oversight despite the low concentrations that cause health effects, the wide-spread use, and pervasive nature of PFAS. The updated policy highlights the fact that certain facilities **continue to not be evaluated for PFAS** in Delaware even though six separate PFAS are listed as hazardous substances under HSCA.

3. *Why is an ITRC document referenced in the authority section of the policy? DNREC is provided the authority for programs only from the authorizing statute and regulations adopted pursuant to the statute.*

"The Interstate Technology Regulatory Council (ITRC) is a state-led environmental coalition to create innovative solutions and best management practices."
(<https://itrcweb.org/about/about>) This organization is one of the most respected organizations in creating documents to assist not only state regulators, but everyone affected by environmental laws nationwide. ITRC uses consensus from experts across multiple regulatory agencies, the regulated community, academic community, and business community to provide products which can be used to assist the entire environmental remediation field. DNREC contributed to what is stated in ITRC documents and uses their documents to assist in executing HSCA laws.

4. *Will this policy cover sediments?*

DNREC-RS is not implicitly discussing sediments in this version of the policy. One reason is that biosolids can be considered a sediment, and we do not have enough state-specific sediment data at this time to include them in this version of the policy. DNREC is currently collecting statewide biosolids data and is planning to collect sediment data statewide to evaluate for PFAS. As more information about sediments becomes available, we can incorporate sediments into the policy. The Risk Assessment section of the policy however does allow a PRP to address sediments, especially in ecological risk assessments. This is true if sediments are deemed to be a media of concern for PFAS through a conceptual site model. Steps should be taken to address PFAS in that media.

5. *The statutory authority for UST, AST and RCRA are not under the HSCA. How will the Department determine if sites or facilities are regulated by the Resource Conservation and Recovery Act (RCRA) and the Leaking Underground and Aboveground Storage Tank Correction Action Program will be subject to this Policy?*

While USTs, ASTs, and RCRA facilities have their own laws and regulations that addresses contamination and releases from their systems or processes, HSCA can still apply to the real property those facilities occupy. Due to the nature of PFAS contamination, the facilities that are regulated under Delaware's UST and AST laws or RCRA (through Delaware's Regulations Governing Hazardous Waste), still could be potential sources of, and may have released PFAS to the environment. For example: a gas station with a regulated UST system and a car wash located on the property. The PRPs of these facilities should use all appropriate inquiry (AAI) to investigate potential PFAS use at their own or adjacent facilities during investigations associated with other regulatory programs and include PFAS (if necessary) to save time and money on investigations.

6. *Has DNREC adopted the Federal Rule designating PFAS as a hazardous waste under the RCRA regulations?*

On October 26, 2021, the USEPA proposed to designate four PFAS compounds (PFOA, PFOS, PFBS, and "GenX") as "hazardous constituents" under RCRA. To date, the USEPA has not finalized this rule. Since RCRA is a Federal program with its own rules and regulations with regard to cleanup, any facility regulated under RCRA will be required to follow those Federal rules (through Delaware's Regulations Governing Hazardous Waste). DNREC is closely monitoring the USEPA's press releases under their PFAS Strategic Roadmap. Naming certain PFAS compounds as RCRA hazardous constituents will automatically include those same compounds as hazardous under CERCLA. All four of the PFAS compounds mentioned in the proposed EPA rule are already hazardous substances under HSCA.

7. *A 'requirement' merits following the APA (Administrative Procedures Act) and was reinforced in Baker Vs. DNREC. Thus, if this is to be a legally enforceable 'requirement' it must go thru (sic) APA.*

The word "requirement" in this sense is not a legally enforceable requirement, rather the word is meant as a requirement under standard scientific practices. As an example, if during an initial investigation, aqueous film-forming foam (AFFF) was found to be used at a facility, the person completing the investigation is compelled (or required) to sample for PFAS; not by law but by scientific principles. The same would apply to a facility where historic dry cleaning took place. There would be a requirement to sample for chlorinated solvents. Further, since scientific principles are standard rules of practice used by DNREC-RS, the agency is exempted from APA under 29 Del. C. § 10113(b)(2). We allowed the HAC to review and comment on this policy before it was finalized meeting the spirit of APA.

8. *How much time does DNREC plan to provide after finalizing this policy [update] to require implementation? We request that DNREC provide at least two months for the policy to become effective to allow for the requirements to be included in the work being proposed on a site.*

DNREC-RS has had a PFAS Policy in place since July 2, 2018. This document is an update to that policy based on the amount of information acquired and data collected since July of 2018. The regulated community has also known about an update to this policy since July of 2021. This policy incorporated parts of ITRC's PFAS document which has been regularly updated since 2017, when the ITRC PFAS team began work. There has been an expectation since 2015, when PFOA and PFOS were listed as hazardous substances under HSCA, that PRPs were to investigate certain PFAS contamination with regard to HSCA facilities. The HSCA laws have required facilities to address certain PFAS compounds. This policy aims to reinforce what is already established under HSCA. The regulated community have had over 7 years to incorporate PFAS into investigations covered under HSCA.

Comments About Table 1

In general, DNREC-RS received many positive comments about the inclusion of Table 1. The table summarizes many of the potential sources of PFAS in the latest update made to the ITRC PFAS document. The table will be edited for additional clarity using suggestions from commentors. Many of comments are included below.

9. *Are there documented cases of crematoriums being sources of PFAS to the environment?*

While there is little documentation of crematoriums being sources of PFAS, the bio-accumulative nature of PFAS compounds in living tissue may introduce PFAS into the environment through inadvertent emissions through cremation.

10. *The cleaning facilities list names car washes, dry cleaners, and carpet cleaners, which are distinct types of operations. The listed media to sample may not be relevant for each of these facilities and can vary even within facilities of the same type (e.g., car washes with different waste water management/discharge practices).*

This comment is correct in pointing out the listed media to sample may not be relevant for each facility type. The initial investigation should identify how the wastewater produced by the facility was handled and a Sampling and Analysis Plan should be developed in concert with the conceptual site model being developed for the facility. This plan will determine what media to sample and where to collect those samples. The 'Media to Sample' column will be updated to provide more clarity.

11. *The waste management facilities list includes a wide variety of facilities without distinction. For example, a wastewater treatment plant likely has no impacts to soil at the facility, but both shallow and sub-surface soil are listed as media to sample.*

According to the ITRC Sources of PFAS Releases to the Environment document (<https://pfas-1.itrcweb.org/2-6-pfas-releases-to-the-environment/>), leakage and unintended releases from surface impoundments and structures plus the management and disposal of biosolids and other byproducts during the treatment of wastewater can release PFAS to soil. The practice of burying biosolids at wastewater treatment facilities is also known to have occurred in the past, especially at smaller municipal systems. Moreover, sampling at these facilities would only be completed if the treatment plant is defined as a facility under HSCA.

12. *The [updated] Draft Policy contains a protocol for evaluation of sites that references Table 1, which contains criteria for designating sites (properties) as Primary, Secondary and Tertiary PFAS Sources. This categorization appears to make a determination that sites falling within these definitions are sources of PFAS compounds. However, source determinations should only be made after investigations are complete. While the historic operations on a site are an important factor in determining the nature and extent of site investigations, the determination that a facility is a source of PFAS hazardous substances (or any other hazardous substance) should be based upon analytical data resulting from a site investigation.*

The information compiled in **Table 1** is based on ITRC's PFAS document (<https://pfas-1.itrcweb.org/>), which contains an exhaustive listing of potential PFAS sources. There are some potential sources of PFAS not included in **Table 1** that are listed in the ITRC document since they do not exist in Delaware (ski slopes, for example). This information is vital for persons completing an AAI for initial investigations, Phase I Environmental Site Assessments (ESAs), or for initial investigations. The first step in source determination is identifying potential sources. Analytical data is then collected in identified media to determine if PFAS need to be addressed under HSCA.

13. *We suggest that while it is essential to use the history of a site as a basis for structuring the investigation, the categories contained in Table 1 should be eliminated or deemphasized so that they do not unreasonably distort the focus of site investigations.*

The facilities and sources listed in this document have been developed via consensus from regulators, the regulated community, businesses, and academia. The sources listed are also specific to the State of Delaware and are listed in this policy to communicate to the public where potential sources of PFAS may be located. The elimination or deemphasis of this table could reasonably distort the focus of site investigations conducted under HSCA.

14. *The language suggests that DNREC has broad authority to require investigation of “tertiary sources”, which may include adjacent properties. While there may be circumstances in which such an investigation is necessary or appropriate, it is not universally true. In sum, the Draft Policy should be revised to eliminate provisions that overlap and potentially conflict with universally accepted standards for site investigation.*

This policy only applies to primary and secondary sources listed in **Table 1**. There is no broad authority under HSCA to evaluate many of the tertiary sources listed. (See Forrest Avenue PFAS, DE-1794) The policy implicitly states that tertiary sources can be considered if there is proper documentation for the inclusion of PFAS. The policy goes on to state that the inclusion of tertiary sources in **Table 1** is for assisting PRPs in developing conceptual site models during the investigation or any other phase of the remedial process.

15. *One of the tertiary sources listed is residential style. This is a broad inclusion that could result in a significant number of facilities being investigated that have little potential to cause environmental degradation from PFAS presence (e.g., any facility with outdoor furniture with fabric cushions).*

As stated previously, tertiary sources listed in **Table 1** are not intended to be sources investigated under HSCA unless there is proper documentation for their inclusion. Their listing in the policy is to provide PRPs with additional information about the nature and extent of PFAS for the development of conceptual site models. Moreover, 7 Del. C. § 9103(25)(c) specifically exempts the application of fertilizer to be defined as a release. Buildings, including nursing homes and hospitals (dubbed residential style), that used floor waxes that contained PFAS are a growing concern and are listed here to make PRPs aware that they may be a tertiary source of PFAS.

Comments on Investigations, Risk Assessments, and COCRs

16. *In the Investigation subsection, the Policy states “PFAS compounds should be addressed through ... and the risk the contaminant poses to human health and the environment.” Given the limited available data on risk (e.g., cancer risk) for a small number of PFAS, how is risk to be quantified?*

DNREC-RS *Guidance for Human Health Risk Assessments under HSCA*, addresses how PRPs will evaluate PFAS risks to human health and cancer risk. The PFAS compounds listed on the HSCA screening table and considered hazardous substances will be evaluated along with any other contaminants of concern for the appropriate risk drivers. Additional PFAS compounds may (but not required) be included based on site-specific considerations and with guidance from DNREC-RS.

17. *The Initial Investigation subsection is overly broad regarding sampling for PFAS in public supply wells in well head protection areas (WHPA). It does not account for multiple sources and comingled plumes. As written, it may discourage potentially responsible parties from initiating voluntary investigations.*

The policy is meant to be broad since it is not regulation. The data and information collected at each site will drive the scope of each specific investigation and the HSCA laws will apply to how those investigations and remedial actions will be completed. If multiple sources are identified during the initial investigation, the scope of the remedial investigation should include those sources.

18. *This [policy] notes that the Department may ask for sites without a Phase I environmental site assessment (ESA) or Phase II ESA to conduct a PFAS evaluation. Will the Department direct a PFAS evaluation in such circumstances or request one?*

Like any other hazardous substance, a PFAS evaluation is required under HSCA if there is evidence of a release or an imminent threat of a release at a facility. This type of evaluation can be completed at any point in the remedial process.

19. *The classification of various well classes. The one thing that may be concerning is the inclusion of agricultural and irrigation wells. This may lead to the evaluation of uptake to crops and livestock, which may bring up a similar problem that occurred in New Mexico that required a dairy farm to euthanize their animals due to PFAS contamination in the milk and meat. It may be worth a discussion with DNREC about their intent. Whether it is just to limit the exposure routes based upon well types or is it more open-ended.*

The inclusion of the various types of well classifications under the Division of Water was provided for the visualization of pathway evaluation as it relates to human health. Currently, the ingestion of contaminated drinking water and soil is the main risk driver for PFAS. However, additional routes of exposure for groundwater may drive risk in the future. The inclusion of this table is to account for any future groundwater exposure pathways that may need to be evaluated under HSCA. The evaluation of uptake into crops and livestock is outside the authority of HSCA.

20. *Is the Risk Evaluation Section of the Policy intended to modify the Human Health Risk Assessment Policy adopted by DNREC?*

No. The Risk Assessment section of this policy seeks to identify other pathways of potential concern for PFAS. The ingestion pathway, especially of contaminated drinking water, is the primary pathway of concern for now. However, as more information and research regarding PFAS becomes available, other pathways or routes of exposure might have to be evaluated. This policy prepares PRPs for that scenario.

21. *The current human health risk assessment guidance does not currently address the soil to groundwater pathway. HSCA Screening Levels also do not currently take soil->gw pathway into consideration. Is DNREC considering adding soil to groundwater SLs?*

The current route of exposure to PFAS is through ingestion of contaminated drinking water. There is growing evidence that certain PFAS compounds leach readily from soil to groundwater. Due to the low levels of PFAS that cause health effects and the persistence in the environment, evaluating the soil to groundwater pathway is a consideration worth investigating. The USEPA has within the RSL guidance a section on how to evaluate the soil to groundwater pathway.

22. *This [policy] suggests that a soil to groundwater assessment is only warranted when deeper soils are impacted by PFAS. Further, this paragraph suggests that assessment of the soil to groundwater pathway is up to the consultant.*

The HSCA laws require a risk evaluation of hazardous substances detected above the screening levels. If during the development of conceptual site model, drinking water receptors are identified, an evaluation of those drinking water supplies is warranted. A soil to groundwater evaluation will assist PRPs in such an evaluation, especially if there is sub-surface (greater than 2 feet below ground surface) soil contamination identified at the facility. Due to the extremely low levels of PFAS in groundwater that cause health effects, this evaluation can be extremely valuable. This type of evaluation will rely on a team approach to decide if an evaluation of the soil to groundwater pathway is needed. Protecting the drinking water resources for the citizens of Delaware is important consideration since over two-thirds of the people rely on groundwater for their drinking water.

23. *Are there any additional requirements for those sampling a public supply well?*

The Draft Policy mentions that the Sampling and Analysis Plan (“SAP”) should contain specific requirements to prevent sample contamination. This is appropriate. However, it does not provide any practical guidance on how to prevent cross contamination or address any PFAS specific issues in sampling and analysis.

DNREC has issued guidance on sampling public supply wells and contains protocols to prevent cross-contamination and other PFAS related issues on field sampling and can found at:

<https://documents.dnrec.delaware.gov/dwhs/remediation/Statewide-PFAS-in-PWS-Work-Plan.pdf>

24. *If data is reported to DNREC for which there is not a HSCA screening level, will the contaminants be covered by the Certificate of Completion of Remedy [COCR] when the cleanup is complete? If not, how can DNREC require an analyte to be reported when a Reporting Level or Screening Level on a site with land disturbance has not been exceeded?*

A COCR can only apply to contaminants that are listed as hazardous substances and to those hazardous substances that were identified as contaminants of concern (COC). So PFAS compounds not listed as hazardous, nor identified as COCs are not covered. This policy does not require any specific analytical method or dictate which PFAS compounds to report other than those listed as hazardous substances under HSCA. The reporting of additional PFAS compounds, while not required under HSCA laws, can be useful in determining source areas, identifying the age of the plume, identifying additional compounds that may become hazardous substances, and applying the data collect from an individual facility to data collected state-wide. The scope of what is identified at reported at a facility is dependent on the site-specific project goals and the SAP.

Comments on Analytical Methods

25. *This paragraph does not say the analysis must be done by a HSCA approved lab. It says, "any method or a hybrid method can be used as long as the results are defensible and meet the data quality objectives (DQOs) established in the SOPCAP or the analytical work plan". Who should the results be defensible to, to DNREC lab? who decides? What are the criteria?*

The criteria for PFAS analytical methods are set out in each prescribed method listed. The HSCA laws authorizes DNREC to establish scientific protocols to validate analytical data received from a laboratory. The criteria are established in the SOPCAP.

26. *Could any of the methods or a hybrid method listed in Table 2 be used as long as the results are defensible? Does this mean a facility needs to ask DNREC which of the 5 methods to use?*

The policy does not define or compel anyone to use the methods within or the methods not stated in the policy. The methods listed in the policy are the most commonly used at PFAS investigation sites and presented in the policy as a guide. The method selected at HSCA sites will be based on the site-specific project needs. DNREC will allow PRPs to choose the best method based upon the needs and data objectives of the project, even if those methods are not listed in the policy.

27. *Is there toxicity data for the list of 37 analytes in DNREC REM?*

Toxicity data does exist for some of the compounds in the DNREC REM PFAS analyte list but not all. More information about toxicity of certain PFAS compounds can be found at: <https://www.epa.gov/pfas/pfas-resources-data-and-tools>

28. *The document contradicts itself about the required analytes. In some places it seems to require 37 different PFAS compounds. In other places it says the levels will be evaluated against the levels in the HSCA list, which only contains 2 PFAS compounds (PFOA and PFOS).*

The policy does not require a list of analytes. The PFAS analytes that are retained for evaluation under HSCA are found on the HSCA screening level table which may be updated with additional PFAS analytes. However, the inclusion of other analytes will absolutely assist PRPs with developing a more comprehensive conceptual site model, may be helpful in meeting other requirements under HSCA (for source identification), and those additional PFAS analytes may become hazardous substances in the future. The “DNREC REM” PFAS list will also enable PRPs to compare their data with the data collected by DNREC in state-wide sampling events.

29. *In the statement is “most consistent and accurate results” based on multi-lab validation? If so, which labs were used to validate the data? The EPA goes through multi-lab validation before approving a method.*

Method 537M is based on EPA Method 537.1. The modification made to the established EPA method are lab-specific modifications used to analyze a variety of media using lab-specific protocols that are considered proprietary information. The EPA is responsible for completing the multi-lab validation process for their published methods. A modified method, by definition, does not go through this same process. DNREC-RS also completed a blind performance evaluation with our contracted labs in accordance with the SOPCAP.

30. *It is implied that TOP results and targeted results from 537M DNREC REM are going to be considered to be equivalent and comparable? They are not. TOP may miss some of the targeted 37 analytes while picking up others that are not on the list. It would make sense if the intent were to use TOP as a screening tool to select samples for targeted analysis, even though TOP is a very expensive analysis. A more practical, economical approach will be to use combustion ion chromatography as a screening tool (EPA Method 1621).*

Thank you for pointing out that the TOP assay is not comparable to the parent method used. The policy will be updated to reflect that. The TOP assay would be a good screening tool to see what other PFAS compounds could potentially transform into terminal PFAS and is more widely used across the country. The combustion ion chromatography method described in EPA Method 1621 can be used as a screening tool as well. The method has to meet SOPCAP and HSCA requirements for the data to be used. Again, the project needs and DQOs for the project will guide PRPs to select the best analytical method for their project.