



1550 Crystal Drive, Suite 804
Arlington, VA 22202

T: 800-424-2869
T: 202-244-4700
F: 202-966-4824

February 22, 2021

Via electronic submission: <https://www.regulations.gov/>

Mr. Carlos Pachon
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20004

RE: Docket ID No. EPA-HQ-OLEM-2020-0527

Dear Mr. Pachon:

The National Waste & Recycling Association (NWRA) appreciates the opportunity to provide comments on the draft Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) and Materials Containing PFAS (Draft Interim Guidance). NWRA is a trade association that represents private-sector waste and recycling companies in the United States, and manufacturers and service providers who do business with those companies. NWRA's members operate in all fifty states and the District of Columbia. NWRA provides leadership, education, research, advocacy, and safety expertise to promote North American waste and recycling industries, serve as their voice, and create a climate where members prosper and provide safe, economically sustainable, and environmentally sound services.

NWRA members are impacted by the Draft Interim Guidance as they have hundreds of waste and recycling collection, processing, and disposal facilities across the country. Through these operations, they manage the end-of-life for many products that contain PFAS. This includes landfills, waste-to-energy, underground injection, recycling, and composting facilities.

NWRA members are particularly interested in providing comments on the Draft Interim Guidance given the statutory directive for the U.S. Environmental Protection Agency (EPA) to consider landfill disposal as a management option for certain PFAS-

containing wastes and options for managing landfill leachate. Acknowledging that the National Defense Authorization Act of 2020 (NDAA) provided an aggressive timeline for EPA to prepare the Draft Interim Guidance, our comments are intended to assist the agency in developing future updates to the document.

I. Important Considerations for EPA to Consider in Continuing to Evaluate Landfills as Appropriate for Managing Waste Streams Containing PFAS

In order to understand and safely manage PFAS in waste streams and to minimize related impacts, it is important to compare destruction and disposal options with the benefits they provide in reducing exposures. In doing so, EPA should recognize the following distinguishing features of landfill disposal of PFAS wastes:

- Landfills are essential to protecting human health and the environment because they provide safe and secure disposal of waste materials that remain after reuse, recovery, and recycling. Landfills are subject to extensive and evolving federal, state, and local environmental, health, and safety requirements. Our industry has made significant investments to ensure that landfills are designed, constructed, and operated to protect waste streams from migrating to the environment.
- While our operations neither manufacture nor use PFAS, we receive wastes containing numerous and undefined PFAS compounds and quantities of PFAS from those we serve.¹ PFAS cannot be significantly reduced in landfills or landfill leachate without limiting inbound waste sources. However, landfills cannot avoid receipt of wastes containing PFAS from households. It is also impractical to expect that landfills can significantly reduce waste from other generators that routinely discard household products, packaging, carpeting, and goods containing PFAS. Initiatives that reduce the manufacture and use of PFAS are the most effective means of reducing PFAS in landfills and thus in leachate.
- PFAS concentrations in leachate may be sensitive to changes in consumer use of PFAS, as reflected in unpublished data gathered over the course of several years and submitted to the State of Minnesota. The data suggest a downward trend in concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in leachate that appear to correlate with U.S. policies phasing out the manufacture and use of these compounds in consumer products.
- Research has concluded that Subtitle D landfills can reliably sequester certain PFAS compounds. For example, an October 2019 study directed by the State of Vermont² collected 100 samples from waste streams suspected to contain PFAS compounds entering the NEWSVT Landfill in Coventry, VT. The study found

¹ *PFAS Factsheet*, NATIONAL PFAS RECEIVERS (Nov. 1, 2019), at <https://wasterecycling.org/wp-content/uploads/2021/02/National-PFAS-Receipters-Factsheet2.pdf>

² Vermont DEC. Vermont PFAS Investigation and Response. Website: <https://dec.vermont.gov/pfas>; Sanborn, Head & Associates, Inc. PFAS Waste Source Testing Report. October 2019. <https://anrweb.vt.gov/PubDocs/DEC/SolidWaste/OL510/OL510%20202019.10.15%20NEWSVT%20PFAS%20Source%20Testing%20Rpt%20-%20Final.pdf>

lower quantities of PFAS leaving in landfill leachate than entering the landfill in waste streams. The study indicated a significant fraction is sequestered from environmental “cycling.” As such, because modern lined landfills contain waste and protect the groundwater, they can be a preferred solution for safe disposition of PFAS-containing waste.

- Some landfills operate as closed-loop systems that recirculate any leachate that is generated without contributing any influent to publicly-owned treatment works (POTWs). Additionally, landfills may use stabilization or solidification technologies as further means of sequestering waste constituents.
- Landfills and POTWs often are interdependent, and both are vital to communities throughout the United States. Many landfills rely on POTWs for leachate treatment to ensure compliance by controlling leachate fluid levels. POTWs, in turn, increasingly rely on landfills for biosolids management. Any effort to address PFAS at landfills and POTWs must avoid disrupting this interdependence. If landfills curtail acceptance of biosolids from POTWs to avoid PFAS, or POTWs are forced to exclude landfill leachate, those waste streams will be stranded. This would impose significant costs for alternative management of those wastes for businesses and consumers and could curtail the ability of some landfills or POTWs to continue operating.
- The mass of PFAS in leachate that contributes to POTWs is typically low. The leachate received at a POTW also often constitutes a small fraction of total incoming flow. Comprehensive studies in the states of Michigan³ and North Carolina,⁴ for example, concluded that non-leachate sources are the most significant mass contributors of PFOA and PFOS at POTWs, whereas landfill leachate represents a minor contribution. PFAS manufacturers or users, by comparison, contribute PFAS at levels that can be orders of magnitude higher than landfills. As such, reducing PFAS in leachate or reducing leachate volumes to POTWs typically will have a negligible effect on concentrations of PFAS in POTW influent and effluent.

³ Michigan Waste & Recycling Association. Statewide Study on Landfill Leachate PFOA and PFOS Impact on Water Resource Recovery Facility Influent. Technical Report. March 1, 2019.

<https://www.bridgemi.com/sites/default/files/mwra-technical-report.pdf>

⁴ National Waste & Recycling Association – Carolina Chapters. North Carolina Collective Study Report. Collective Study of PFAS and 1,4-Dioxane in Landfill Leachate and Estimated Influence on Wastewater Treatment Plant Facility Influent. March 10, 2020. <https://files.nc.gov/ncdeq/Waste%20Management/DWM/NC-Collective-Study-Rpt-03-10-2020.pdf>

II. Recommendations and Data to Support Further Updates to EPA's Draft Guidance

Comment 1. EPA Should Recognize the Importance of the Landfill Sector for the Disposal and Management of PFAS and PFAS-Contaminated Materials

a) *EPA Should Not Conflate the Levels of PFAS Found in Leachate with Other Materials and Media with High Concentrations of PFAS.*

EPA should recognize that leachate typically has low concentrations of PFAS and should not be equated with levels of PFAS that frequently occur in high-concentration materials such as firefighting foams, textiles, and spent filters. For example, sites found near PFAS manufacturers have found contamination at concentrations reaching 100,000 to 500,000 parts per trillion (ppt) while PFAS concentrations have been found as high as 6,950,000 ppt at firefighting sites and military complexes.⁵ By comparison, concentrations in Subtitle D landfill leachate averages about 1,000 ppt for PFOA and about 200 ppt for PFOS.⁶

The apparent downward trend in concentrations of PFOS and PFOA in leachate at certain sites noted above appears to correlate with U.S. policy phasing out the manufacture of these compounds and similar declines of PFOS and PFOA in blood levels in the general public. Based on information collected by the National Health and Nutrition Examination Survey, PFAS in blood for PFOS and PFOA declined by 80% and 60%, respectively, from 1999 to 2014.⁷

As noted above, the Michigan and North Carolina studies found that landfill leachate represents a minor contribution to PFAS influent at POTWs. In the North Carolina study, landfills contributed between 0.7 and 2.9 percent to POTW influent. In addition, the concentrations for PFOA and PFOS measured at wastewater treatment plants that accepted leachate in the Michigan study were not much different than at wastewater treatment plants that did not accept leachate.

b) *Landfills are Subject to Extensive and Evolving Federal, State and Local Health and Safety Requirements*

The Draft Interim Guidance provides a brief discussion of the stringent environmental controls required by Subtitle C of the Resource Conservation and Recovery Act (RCRA) to manage the disposal of hazardous wastes. It is important for stakeholders to understand that the statute establishes comprehensive requirements to ensure that hazardous waste is managed safely from the moment it is generated to its final disposal and includes requirements for hazardous waste

⁵ ENVIRONMENTAL WORKING GROUP. *PFAS Contamination in the United States*. ewg.org/interactive-maps/2019_pfas_contamination/map. last visited Jan. 18, 2021.

⁶ NATIONAL WASTE & RECYCLING ASSOCIATION – CAROLINAS CHAPTER. NORTH CAROLINA COLLECTIVE STUDY REPORT.

⁷ *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in the U.S. Population*. August 21, 2017, https://www.atsdr.cdc.gov/pfas/docs/PFAS_in_People.pdf; Agency for Toxic Substances and Disease Registry, CDC.

generators, transporters, and treatment, storage, and disposal facilities. RCRA Subtitle C permitting also involves frequent agency inspections, necessitating robust internal auditing processes, to ensure that hazardous waste landfill operators comply with permitting and regulatory requirements.

EPA also provides a cursory overview of the environmental controls employed by non-hazardous solid waste landfills without recognizing that these facilities also are subject to extensive and evolving federal, state, and local environmental, health, and safety requirements, including RCRA, the Clean Air Act, and the Clean Water Act. For example, regulations established under Subtitle D of RCRA establish minimum federal criteria for the operation of municipal solid waste and industrial waste landfills, including design criteria, location restrictions, financial assurance, corrective action, and closure and post-closure periods. States also play a lead role in implementing these regulations and may establish additional requirements that are more stringent than the federal standards.

Comment 2. Updated Guidance Should Reflect Additional Research on the Management of PFAS in Landfill Leachate

a) Recent Data Indicate that Landfills Sequester PFAS Collected in Waste Streams, Preventing the Entire Influent Mass from Entering the Leachate Stream

NWRA agrees that additional research is necessary to determine the extent to which landfills are able to sequester PFAS in incoming waste streams versus mass in leachate. The Vermont study noted above provided some promising information, but additional studies are needed.

b) Concentrations of PFAS in Landfill Leachate and Landfill Gas Condensate.

Data continues to be gathered on PFAS levels in leachate and landfill gas. The guidance should reflect the latest information about PFAS concentrations including information from the previously referenced studies in Vermont, North Carolina and Michigan. In addition, very limited results exist for landfill gas and landfill gas condensate. More analysis is necessary before any conclusions can be reached. For example, results from landfills in Minnesota dispute the conclusion that perfluorobutanesulfonic acid (PFBS) is “the dominant species” in landfill gas condensate. PFBS was not the dominant PFAS in any of the landfill gas condensate samples tested. Further concentrations of PFAS in condensate was generally significantly lower than in leachate.⁸

⁸ MINNESOTA POLLUTION CONTROL AGENCY. *Solid waste Perfluorochemicals (PFCs) Evaluation: Leachate/Gas Condensate: Shipped to Waste Water Treatment Plants for Disposal*. <https://www.pca.state.mn.us/sites/default/files/c-pfc4-03.pdf>

Comment 3. Landfills are Designed and Operated to Protect Groundwater

The Draft Interim Guidance includes numerous unfounded and speculative comments on the risks of PFAS migration into the environment after landfill disposal. For instance, on page 55, EPA acknowledges that landfills “have not been designed explicitly for PFAS containment.” Statements such as these undermine public confidence and the capability of our sector in providing environmental services generally. Landfills are not designed explicitly with any one substance in mind; rather, they are designed to contain the various types of constituents in solid wastes. We are unaware of any studies showing that PFAS pose any landfill integrity risk considerations beyond the many other chemical classes that have been effectively managed in landfills.

An assessment of the environmental protection of a managed Subtitle D landfill performed by Geosyntec Consultants found that “scientific studies and testing has shown that the service life of typical synthetic materials used in liner construction is “estimated to exceed a thousand years” and that when made composite could contain materials for “tens of thousands of years.”⁹ Over the long term, the report found that numerous studies support the conclusion that the “containment features of modern landfills are designed, constructed and maintained as necessary to protect human health and the environment throughout the operational and post-operational life of the facility.”

Comment 4. Further data, information & study of PFAS waste management is warranted

NWRA recognizes that more data, information and study of the management of PFAS-containing waste is warranted. We recommend prioritizing the following:

- Sequestration – Quantifying the amount of PFAS sequestered at Subtitle D landfills would allow better characterization of how landfills perform in managing PFAS containing waste.
- Analytical test methods – Approving analytical methods for matrices such as leachate, wastewater, air, landfill gas, groundwater, stormwater, etc.
- Incineration – Gaining a more complete understanding of the efficiency of PFAS thermal treatment.
- Deep Well Injection – Updating data on wells accepting liquids containing PFAS (Section 3.c.iii) and discussing the fate and transport of well injectate as a whole rather than for PFAS from these fluids in isolation (Section 3.c.v).
- Landfill gas – Studying PFAS in landfill gas relative to other possible air quality, including indoor air. Possible exposure risks from landfill gas

⁹ GEOSYNTEC CONSULTANTS. *Environmental Protection at the Managed Solid Waste Landfill*. March 26, 2010. http://www0.wm.com/gulfcoastoilspill/Environmental_Protection_at_Landfills.pdf.

emissions should be evaluated relative to everyday PFAS exposure for the general population such as household dust and diet.

III. Recommendations

In accordance with the foregoing discussion, NWRA encourages EPA to reconsider the disposal option hierarchy outlined on pages 5 and 6 of the Draft Interim Guidance to give elevated preference to landfills, as the operation of these types of facilities are governed by extensive federal, state, and local environmental health and safety regulation and have proven successful in protecting the environment.

NWRA appreciates the opportunity to comment on the PFAS EPA's Guidance and we look forward to continuing to work with your office on this matter. Should you have any questions, please call Anne Germain at 202-364-3724 or e-mail at agermain@wasterecycling.org.

Very truly yours,



Darrell K. Smith, PhD
President & CEO