



Delivered via electronic mail

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January 10, 2025

Re: Comment of Chesapeake Legal Alliance (CLA) and Potomac Riverkeeper Network (PRKN) on draft permit modification of VPA Permit for Synagro Central, LLC (Permit No. VPA00835), Westmoreland County

Dear Ms. Anamoah:

Virginia Department of Environmental Quality's (DEQ) failure to address per and polyfluoroalkyl substances (PFAS) pollution in land application of biosolids used by Synagro Central, LLC (Synagro), is detrimental to the public health and welfare of Westmoreland residents and the environment. The endangerment of the public and our waterways caused by the failure to regulate PFAS in land application of biosolids violates the Virginia Pollution Abatement Act.

Synagro utilizes biosolids contaminated by PFAS for land applications in Westmoreland County. Land application of PFAS-contaminated biosolids results in PFAS contamination of soils, agricultural products, water and other resources. This PFAS contamination is harmful to

human health, wildlife, and the environment. Virginia law imposes various duties and affords corresponding authorities to DEQ to regulate land application of biosolids in a manner that protects human health, wildlife, water, and the environment from the harms of toxic contamination. These state legal duties and authorities are not coupled to EPA's federal Clean Water Act legal authority to regulate toxic contamination of biosolids, nationally.

DEQ should terminate or revoke, and only reissue a permit to Synagro once the Department has (1) adequately ascertained and addressed PFAS contamination in Westmoreland County and how Synagro's status quo and historic land applications have contributed to certain PFAS contamination in the county and state waterways; and (2) has incorporated PFAS-responsive conditions into a revised permit that ensure compliance with narrative standards for protection of human health and the environment.

In any case, this permit does not address PFAS contamination of biosolids utilized by Synagro and of the farm fields currently approved to participate in Synagro's operation. DEQ must therefore reject the application to substantially expand Synagro's operation in Westmoreland County to avoid worsening the risk of harm that additional land applications pose to human health, water quality, wildlife, and the environment.

Our comment (1) provides a factual background on the dangers of PFAS contamination in biosolids used for land-application, (2) explains why DEQ should revoke and reissue Synagro's permit with PFAS standards protective of the public health and environment, and (3) explains why DEQ must also reject Synagro's request for modification to expand application sites in Westmoreland County.

First, this comment provides information demonstrating that the biosolids Synagro land-applies in Westmoreland County are contaminated with PFAS. The comment provides DEQ with scientific evidence of the dangers of land-applying PFAS contaminated biosolids, and how the "forever chemicals" can cause long term damage to human health, wildlife, agricultural products, waterways, and soil. Using this evidence, our comment explains how DEQ can and should revoke Synagro's current permit; and only reissue a permit with PFAS-responsive standards that are adequately protective of public health and the environment. DEQ must, at the very least, reject Synagro's request for modification that would permit the expansion of the company's continuing land application of PFAS-contaminated biosolids in Westmoreland County. Finally, our comment demands that regulators inform farmers and participating landowners about potential PFAS contamination in Synagro's land-applied biosolids, so they may make fully informed decisions regarding land-application and/or employ their own independent sampling for PFAS contamination in crops and soil.

I. Interests of Chesapeake Legal Alliance and Potomac Riverkeeper Network

Chesapeake Legal Alliance (CLA) is non-profit organization dedicated to providing free legal services to protect the Chesapeake Bay watershed. CLA engages in advocacy and education with the goal of protecting communities within the Chesapeake Bay watershed and preserving the watershed's resources, environment, and aquatic life. CLA's three centers—the environmental action center, education center, and community outreach center—work together to ensure clean water for all. Clean water includes clean drinking water, clean water for enjoyment and recreation, and healthy watershed ecosystems. CLA has identified PFAS as a dangerous threat to the Chesapeake Bay watershed, harming individuals' ability to have clean drinking water, clean water for recreating, and healthy watershed habitats. In an effort to combat this threat, and in furtherance of CLA's goals and mission statement, CLA submits this comment letter opposing the proposed modification to Permit No. VPA00835. Expanding Synagro's land-application of PFAS contaminated biosolids is in direct contradiction to the ideals of CLA, as it will harm waterways, the environment, and human health within the Chesapeake Bay Watershed.

Potomac Riverkeeper Network (PRKN) was established in 2000 to advocate for clean water for the Potomac River and its tributaries, not only for public health and safety reasons, but also for the river's economic, recreational and aesthetic value to over six million people who live in the Potomac River Basin and to the many others who visit it. PRKN's mission is to protect the right to clean water for all communities and all those who live in and rely upon the Potomac and Shenandoah watersheds by stopping pollution, making drinking water safe, protecting healthy river habitats, and enhancing use and enjoyment for all. In pursuit of this goal, PRKN has identified PFAS as a harmful and widespread contaminant throughout the watershed and is actively working to promote measures aimed at identifying and treating this harmful pollutant, inclusive of DEQ's proposed modification of VPA00835. Expanding the practice of land applications of PFAS-contaminated biosolids within the watershed will lead to even greater contamination of the Potomac and its tributaries and corresponding harm to water quality and wildlife, including all those who depend upon them for drinking water and food production, among other economic, recreational and aesthetic purposes.

II. Factual Background

“Harmful per- and poly-fluoroalkyl substances (PFAS) are an urgent public health and environmental issue facing communities across the United States.”¹ The list of harmful PFAS chemicals continues to grow as more resources are allocated to studying the impacts of these

¹ EPA, *PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024* (Oct. 2021), https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf (last visited Dec. 15, 2024).

“forever chemicals.”² The EPA summarizes this concern surrounding the enduring nature of PFAS very well:

Concerns about PFDA and other PFAS stem from the resistance of these compounds to hydrolysis, photolysis, and biodegradation, which leads to their persistence in the environment. PFAS are not naturally occurring in the environment; they are synthetic compounds that have been used widely over the past several decades in industrial applications and consumer products because of their resistance to heat, oil, stains, grease, and water.³

According to the EPA, “most PFAS have limited or no toxicity data.”⁴ However, data that currently exist show that wastewater treatment plant (WWTP) effluents and biosolids are significant sources of PFAS in our environment.⁵ With this study available to DEQ, funded by the Commonwealth of Virginia, it is unclear to the Commenters how DEQ is capable of permitting Synagro to substantially increase land application of toxic PFAS-contaminated biosolids in Westmoreland County.

DEQ is aware of both the concern for PFAS contamination in land-applied biosolids in Virginia, and the likelihood of its existence.⁶ Past public participation with DEQ has highlighted studies that demonstrate the presence of PFAS in biosolids from WWTPs, and the manner in which those biosolids become contaminated.⁷ This section’s purpose is to discuss how available data are more than sufficient to demonstrate how the proposed permit action would worsen the endangerment that this practice poses to public health and the environment (and therefore violates the letter and spirit of the Virginia Pollution Abatement Act⁸).

² Virginia Water Resources Research Center, *Emerging Contaminants in the Waters of Virginia*, SR63-2019 (Oct. 2019), https://www.vwrrc.vt.edu/wp-content/uploads/2019/10/SR63-2019_Emerging-Contaminants-in-the-Waters-of-Virginia.pdf (last visited Jan. 6, 2024); see also EPA, *IRIS Toxicological Review of Perfluorobutanoic Acid (PFBA, CASRN 37522-4) and Related Salts* (Dec. 2022), <https://iris.epa.gov/static/pdfs/0701tr.pdf> (last visited Dec. 19, 2024).

³ EPA, *IRIS Toxicological Review of Perfluorodecanoic Acid (PFDA) and Related Salts* (July 2024), at 1, https://iris.epa.gov/static/pdfs/0702_summary.pdf (last visited Dec. 19, 2024).

⁴ EPA, *PFAS Strategic Roadmap: EPA’s Commitments to Action 2021-2024* (Oct. 2021), at 12, https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf (last visited Dec. 15, 2024).

⁵ Virginia Water Resources Research Center, *Emerging Contaminants in the Waters of Virginia*, SR63-2019 (Oct. 2019), at 17, https://www.vwrrc.vt.edu/wp-content/uploads/2019/10/SR63-2019_Emerging-Contaminants-in-the-Waters-of-Virginia.pdf (last visited Jan. 6, 2024).

⁶ Arjun Vanketusen & Rolf Halden, *National Inventory of Perfluoroalkyl Substances in Archived U.S. Biosolids from the 2001 EPA National Sewage Sludge Survey*, 252-53 J. OF HAZARDOUS MATERIALS 413-418 (May 15, 2013); see also Southern Environmental Law Center, *Comments on the Periodic Review of the Virginia Pollution Abatement (VPA) Permit Regulations (9 VAC 25-32)* (June 15, 2020).

⁷ *Id.* (citing Ulrika Eriksson et al., *Contribution of Precursor Compounds to the Release of Per- and Polyfluoroalkyl Substances (PFASs) from Wastewater Treatment Plants (WWTPs)*, 61 J. ENV’T SCI. 80 (CHINA) (2017)) (citing also John W. Washington et al., *Concentrations, Distribution, and Persistence of Perfluoroalkylates in Sludge-Applied Soils near Decatur, Alabama*, 44 ENV’T SCI. & TECH. 8390 (2010)).

⁸ To be discussed further *infra*.

A. Synagro Sources Biosolids for Land Application in Westmoreland County from WWTPs Known to be Contaminated with Toxic PFAS

Synagro sources biosolids for land applications in Westmoreland County that are known to be contaminated with PFAS. These biosolids are both sourced from within the borders of Virginia, and from across borders in states like Maryland. As recently as October 2024, Synagro reported to DEQ the sources of the biosolids that the company presently utilizes for land application in Westmoreland County—of which at least 24 of 36 sources are known to be PFAS-contaminated through readily-available data.⁹ DEQ’s approved Virginia-based sources of biosolids for land application are also known to the Department to be PFAS-contaminated from the results of the DEQ’s own survey of wastewater treatment facilities in 2022. DEQ has approved other Virginia, Maryland, and DC-based sources of biosolids utilized by Synagro in Westmoreland County that are also known to be PFAS-contaminated. Indeed, the majority of sources and quantities of biosolids that Synagro reports utilizing in Westmoreland County, and which DEQ has approved, are known to be PFAS-contaminated.

1. Synagro’s approved Virginia-based sources of biosolids are contaminated with toxic PFAS

There are at least seven Virginia-based sources of biosolids (all wastewater treatment plants) currently-approved by DEQ for land application that, since at least 2022, are known to the Department for reporting PFAS contamination of their influent, effluent and/or biosolids.¹⁰ In early 2022, DEQ conducted a voluntary survey of potential PFAS dischargers, including publicly-owned treatment works, throughout the Commonwealth.¹¹ Among other data, the survey requested that respondents disclose whether the facility had tested its influent, effluent, and/or biosolids for PFAS; the analytical method for analysis of the samples; and the highest total of PFAS compounds detected, including units of measurement.¹²

⁹ Synagro Central, LLC, Current Source List Report, (Oct. 2, 2024) (Disclosed by DEQ as "Synagro_Current_Source_List_2024-10-02.xlsx" on December 20, 2024 in response to FOIA Request #3671556 of December 13, 2024) (Hereinafter “Synagro Oct 2024 Current Source List”).

¹⁰ City of Danville, Northside Wastewater Treatment Plant (VA0060593); Opequon Water Reclamation Facility (VA0065552); Broad Run Water Reclamation Facility (VA0091383); Hampton Roads Sanitation District Atlantic Sewage Treatment Plant (VA0081248); Upper Occoquan Service Authority, Millard H. Robbins Jr. Regional Water Reclamation Plant (VA0024988); H L Mooney Advanced Water Reclamation Facility (VA0025101); and Richmond Wastewater Treatment Plant (VA0063177). Virginia Department of Environmental Quality, “Approved Biosolids Sources Rev 08/26/2024,” available at <https://www.deq.virginia.gov/home/showpublisheddocument/25448/638610588789170000> (last accessed 1/7/2025) (Hereinafter “DEQ Approved Biosolids Sources”); Virginia Department of Environmental Quality, Results of 2022 DEQ Survey of VPDES Discharges, (Disclosed by DEQ as “2022 DEQ PFAS Survey - complete answers.xlsx” on June 17, 2024 to David Sligh, Wild Virginia) (Hereinafter “2022 DEQ PFAS Survey Results”).

¹¹ 2022 DEQ PFAS Survey Results.

¹² 2022 DEQ PFAS Survey Results.

Of the more than 600 survey responses received and disclosed by DEQ, the reported PFAS sampling data demonstrate that at least seven wastewater treatment plants in Virginia that produce approved biosolids have found PFAS contamination in their effluent and/or biosolids as of 2022.¹³ Of these DEQ-approved sources of biosolids, Synagro has reported, as recently as October 2024, sourcing biosolids for land applications in Westmoreland County from the Opequon Water Reclamation Facility (VA0065552); Broad Run Water Reclamation Facility (VA0091383); and the Upper Occoquan Service Authority, Millard H. Robbins Jr. Regional Water Reclamation Plant (VA0024988).¹⁴

The Arlington County Water Pollution Control Facility (VA0025143), responding to the DEQ’s 2022 survey indicated that it had not sampled for PFAS at that time.¹⁵ However, the organization Wild Virginia later submitted a Virginia Freedom of Information Act (FOIA) records request to Arlington County and received PFAS data records for the facility demonstrating that the plant had sampled for and found PFAS contamination of its influent, effluent, and biosolids in November 2022.¹⁶ An additional facility, the Farmville WWTP (VA0083135), responded to DEQ’s 2022 survey by indicating that the plant’s effluent had been sampled for PFAS but did not provide the results of the sample analysis.¹⁷ In a widely-reported May 2021 study, the Ecology Center and Sierra Club sampled various commercially-available Class A biosolids and found PFAS contamination of “exceptional quality” biosolids produced by the Blue Plains Advanced Wastewater Treatment Plant (DC0021199) operated by the District of Columbia Water and Sewer Authority.¹⁸ Synagro has reported, as recently as October 2024, sourcing biosolids for land applications in Westmoreland County from the Arlington County Water Pollution Control Facility (VA0025143) and the Blue Plains Advanced Wastewater Treatment Plant (DC0021199).¹⁹

2. DEQ has approved land-application of biosolids known to be contaminated with PFAS in Westmoreland County

Synagro has reported sourcing biosolids for land applications in Westmoreland County from sixteen different WWTPs located in Maryland, of which all are approved by DEQ as biosolids sources for land application in Virginia.²⁰ In October 2024, PRKN obtained data from

¹³ 2022 DEQ PFAS Survey Results; DEQ Approved Biosolids Sources.

¹⁴ Synagro Oct 2024 Current Source List.

¹⁵ 2022 DEQ PFAS Survey Results.

¹⁶ Pace Analytical, Analytical Results Report # 222112807 (Feb. 21, 2023) (Disclosed by Arlington County as “Arlington Attachment_1_PFAS_sample_results_2-21-23.pdf” to David Sligh, Wild Virginia).

¹⁷ 2022 DEQ PFAS Survey Results.

¹⁸ Ecology Center and Sierra Club, *Sludge in the Garden: Toxic PFAS in home fertilizers made from sewage sludge*, May 25, 2021.

¹⁹ Synagro Oct 2024 Current Source List.

²⁰ Annapolis WRF (MD0021814); Ballenger Creek WWTP (MD0021882); Broadneck WRF (MD0021644); Broadwater WRF (MD0024350); Cox Creek WRF (MD0021661); Damascus WWTP (MD0020982); Frederick City WWTP (MD0021610); Little Patuxent WRP (MD0055174) (Biosolids by lime stabilization and anaerobic

the Maryland Department of Environment's (MDE) own sampling of biosolids at dozens of WWTPs throughout Maryland.²¹ Virginia currently approves land application of sewage sludge sourced from 22 plants located in Maryland.²² By cross-referencing the sampled plants in Maryland to Virginia's list of approved sources of biosolids for land application, PRKN found all 22 wastewater treatment plants in common.²³ With sampling conducted by Maryland's environmental regulators and laboratory analysis performed by Maryland's health department, Maryland's data demonstrates significant PFAS contamination in biosolids from the 22 Maryland WWTPs that DEQ has approved for land application in Virginia, at least as recently as 2023.²⁴ On November 19, 2024, DEQ's Office of Land Application Programs acknowledged receipt of PRKN's submission of its analysis and of MDE's disclosures of primary-source data records.²⁵

PRKN submitted various FOIA requests in December 2024 to owners and operators of certain DEQ-approved sources of biosolids that Synagro reports currently utilizing for land applications in Westmoreland County, in addition to those earlier described in this comment.²⁶ The Alexandria Renew Enterprises WWTP (VA0025160) responded to the request to provide records of PFAS sampling conducted in 2023 and 2024, demonstrating PFAS contamination of the facility's influent, effluent, and biosolids.²⁷ The Town of Purcellville responded to a FOIA request by disclosing multiple laboratory records for sampling of effluent and biosolids produced by the Basham Simms WWTF (VA0022802) collected in October 2022, February 2023, June 2023, and May 2024 – all demonstrating contamination by multiple PFAS constituents in significant quantities.²⁸

The South Central Wastewater Authority WWTF (VA0025437) responded to a FOIA request to indicate that the Authority did not have PFAS data but offered instead that citizens had specifically requested that the DEQ require PFAS monitoring of the WWTF, which the Department then refused to incorporate into the most-recent renewal of its VPDES pollution

digestion); Marlay-Taylor WRF (MD0021679); Maryland City WRF (MD0062596); Mattawoman WWTP (MD0021865); Parkway WWTP (MD0021725); Patuxent WRF (MD0021652); Piscataway WWTP (MD0021539); and Seneca WWTP (MD0021491). Synagro Oct 2024 Current Source List; DEQ Approved Biosolids Sources.

²¹ Disclosed by MDE as "202402502.pdf" in two parts on October 28, 2024 in response to Maryland Public Information Act Request #2024-02502 of September 26, 2024 (Hereinafter "MDE WWTP PFAS Data Disclosures").

²² DEQ Approved Biosolids Sources.

²³ David Flores, *For Virginia's environmental regulators, the truth may hurt for a little while, but PFAS are "Forever Chemicals,"* Potomac Riverkeeper Network, November 13, 2024.

²⁴ *Id.*; MDE WWTP PFAS Data Disclosures.

²⁵ Email from David Flores, Senior Legal Counsel, PRKN to Neil Zahradka, Manager, Office of Land Application Programs / Water Division, Virginia Dept. of Env. Quality (Nov. 19, 2024, 1:00PM EST); Email from Neil Zahradka, Manager, Office of Land Application Programs / Water Division, Virginia Dept. of Env. Quality to David Flores, Senior Legal Counsel, PRKN to (Nov. 19, 2024, 1:22PM EST) (Mr. Zahradka's response confirming receipt of the data records submission to DEQ).

²⁶ Synagro Oct 2024 Current Source List.

²⁷ Email from Matt Robertson, Director of Communications, AlexRenew to David Flores, Senior Legal Counsel, PRKN (Nov. 26, 2024, 2:59PM EST) (Disclosures attached).

²⁸ Email from Kimberly Bandy, Town Clerk and FOIA Officer, Town of Purcellville to David Flores, Senior Legal Counsel, PRKN (Jan. 6, 2025, 1:27PM EST) (Disclosures attached).

discharge permit.²⁹ Predictably, other Virginia wastewater treatment facilities approved as biosolids sources for land application - but not otherwise required by the DEQ to sample for PFAS - also responded to indicate that no PFAS data were currently available.³⁰

3. Synagro reports currently using PFAS contaminated biosolids for land-application in Westmoreland County

Synagro submitted a report to DEQ, dated October 2, 2024, listing the sources of biosolids currently utilized by the company and the amounts of “annual biosolids land applied” from each source in dry tons.³¹ This list presumably indicates at least those sources of biosolids that Synagro currently utilizes in Westmoreland County and, perhaps, also for other counties where the company is permitted by DEQ to land-apply biosolids. In any case, Synagro lists 36 different current sources of biosolids for its operations, of which 24 are known to be PFAS-contaminated.³² PRKN could not identify any readily available sampling data for PFAS contamination of the influent, effluent, and/or biosolids produced by the other 12 listed sources.

Of the 36 current sources reported by Synagro, the company reports land applying biosolids in any quantity greater than 0.0 dry tons from only 23 of those sources.³³ Synagro reports annual biosolids land applications from these 23 sources totaling 33,774.43 dry tons.³⁴ PRKN could not identify any readily available sampling data for PFAS contamination for 6 of these 23 sources.³⁵ Of the 17 known-contaminated sources on Synagro’s current list actually utilized, the company reports annual biosolids land applications totaling 27,472.44 dry tons.³⁶

²⁹ Email from Melissa Wilkins, FOIA Officer, South Central Wastewater Authority to David Flores, Senior Legal Counsel, PRKN (Dec. 30, 2024, 8:00PM EST).

³⁰ These sources include: Town of Strasburg STP (VA0020311); City of Lynchburg Regional WWTP (VA0024970); and Warrenton Town Sewage Treatment Plant (VA0021172). PRKN did not seek PFAS data for Section 1 and Section 8 of the Virginia American Water wastewater treatment facilities in Prince William County (VA0024724 and VA0024678), because the facilities are owned and operated by Virginia American Water, a private company not subject to citizen records requests pursuant to Virginia FOIA law.

³¹ Synagro Oct 2024 Current Source List.

³² Alexandria Renew Enterprises WWTP (VA0025160); Annapolis WRF (MD0021814); Arlington County Water Pollution Control Facility (VA0025143); Ballenger Creek WWTP (MD0021882); Basham Simms Wastewater Facility (VA0022802); Broad Run Water Reclamation (VA0091383); Broadneck WRF (MD0021644); Broadwater WRF (MD0024350); Cox Creek WRF (MD0021661); Damascus WWTP (MD0020982); District of Columbia Advanced WWTP at Blue Plains (DC0021199) (EQ Cake and Class B); Frederick City WWTP (MD0021610); Little Patuxent WRP (MD0055174) (Biosolids by lime stabilization and anaerobic digestion); Marlay-Taylor WRF (MD0021679); Maryland City WRF (MD0062596); Mattawoman WWTP (MD0021865); Opequon Water Reclamation Facility (VA0065552); Parkway WWTP (MD0021725); Patuxent WRF (MD0021652); Piscataway WWTP (MD0021539); Seneca WWTP (MD0021491); and Upper Occoquan Service Authority, Millard H. Robbins Jr. Regional Water Reclamation Plant (VA0024988).

³³ Alexandria Renew Enterprises WWTP; Annapolis WRF; Basham Simms Wastewater Facility; Broad Run Water Reclamation; Broadneck WRF; Broadwater WRF; Damascus WWTP; District of Columbia Advanced WWTP at Blue Plains (EQ Cakes and Class B); Little Patuxent WRP (Biosolids by lime stabilization and aerobic digestion); Lynchburg Regional WWTP; Maryland City WRF; Mattawoman WWTP; Opequon Water Reclamation Facility; Parkway WWTP; Patuxent WRF; Seneca WWTP; South Central Wastewater Authority WWTF; Strasburg STP; Virginia American Water Prince William – Section 1 and Section 8; and Warrenton Town Sewage Treatment Plant.

³⁴ Synagro Oct 2024 Current Source List.

³⁵ Sources include: Lynchburg Regional WWTP, South Central WWTF, Strasburg STP, and sections 1 and 8 of the Virginia American Water wastewater treatment plants in Prince William County, Virginia.

³⁶ Synagro Oct 2024 Current Source List.

Therefore, more than 81% of the quantity of biosolids that Synagro reports to have land applied annually originated from known PFAS-contaminated sources produced by WWTPs in Virginia, Maryland, and D.C.

According to DEQ's records tracking Synagro's land applications, Synagro reported using biosolids from 13 different sources for land applications in Westmoreland County between January and April 2024.³⁷ During this period, Synagro applied 1,054.24 dry tons of biosolids sourced from the Western Branch WRRF (MD0021741) on farm fields in Westmoreland County on 48 occasions, more frequently than from any other source.³⁸ In June 2023, MDE sampled biosolids from the Western Branch WRRF and detected 17,900 ppt PFOS, 7,920 ppt PFOA, and 356,503 ppt across all 40 analyzed PFAS constituents.³⁹ Two years earlier, in September 2021, the Washington Suburban Sanitary Commission (WSSC), which operates the Western Branch WRRF, sampled biosolids on two separate dates, reporting PFOS levels of 15,000 ppt and 32,000 ppt, among other PFAS constituents.⁴⁰ Additionally, Synagro reported applying 1,986.28 dry tons of biosolids from the Crops, Inc. storage facility in King George County (VPA00051) on farm fields in Westmoreland County on 41 occasions during the same timeframe.⁴¹ As of August 26, 2024, the Crops, Inc. storage facility is not among those biosolids sources listed as currently approved by DEQ for land applications in Virginia.⁴²

B. Land applied contaminated biosolids are contaminating soil, water, and food in Westmoreland County

There is no information to suggest that there is anything fundamentally different about the practice and environmental impacts of land-applying PFAS-contaminated biosolids in Virginia than in other states. Peer-reviewed research and decades of government data demonstrate conclusively that sewage sludge that goes on to be used as biosolids for land application is contaminated with PFAS. Studies also demonstrate that reported concentrations of PFAS in soil were positively correlated with the increased loading rate of biosolids applied to those soils.⁴³ PFAS in these land-applied biosolids can leach into groundwater and run off into

³⁷ Virginia Department of Environmental Quality, Synagro Westmoreland County daily land application 2013-2024 (Disclosed by DEQ as "Synagro Westmoreland County daily land application 2013-2024.xlsx" on January 3, 2025 in response to FOIA Request #3671556 of December 13, 2024) (Hereinafter "DEQ Tracking Spreadsheet for Synagro Westmoreland Applications 2013-2024").

³⁸ *Id.*

³⁹ MDE WWTP PFAS Data Disclosures.

⁴⁰ MDE WWTP PFAS Data Disclosures.

⁴¹ DEQ Tracking Spreadsheet for Synagro Westmoreland Applications 2013-2024

⁴² DEQ Approved Biosolids Sources.

⁴³ Virginia Water Resources Research Center, *Emerging Contaminants in the Waters of Virginia*, SR63-2019 (Oct. 2019), at 18 (citing J. G. Sepulvado et al., *Occurrence and fate of perfluorochemicals in soil following the land application of municipal biosolids*, 45 ENV'T SCI. & TECH. 8106-8112 (2011)).

surface waters nearby.⁴⁴ Indeed, global studies show the presence of PFAS in soil and groundwater following land application of contaminated biosolids.⁴⁵

1. Wastewater treatment plants produce PFAS laden sewage sludge used as biosolids for land-application.

It is crucial to highlight how PFAS make their way into biosolids used in land-application by Synagro and others. Wastewater treatment technologies do not remove PFAS. In fact, the amount of PFAS in the effluent of WWTPs is up to 19X higher than the influent, demonstrating that wastewater treatment processes produce and concentrate stable, long-lasting PFAS that contaminate the environment.⁴⁶ Current treatment methods not only fail to eliminate PFAS, but concentrate stable PFAS chain structures in sewage sludge as well.⁴⁷ For example, “[m]easured increases in PFAS levels due to precursor transformation during wastewater treatment in WRRFs [] have been observed.”⁴⁸ Indeed, biosolids produced from sewage sludge generally become “enriched” with PFAS through the wastewater treatment process.⁴⁹ The following sections highlight how “PFAS-enriched” biosolids contaminate the soil, plants, water, and food in areas where they are land-applied.

2. Contamination of soil and plants.

Studies conducted on farmland receiving land application of PFAS contaminated biosolids in Decatur, Alabama and Arizona both show the same result—increased PFAS surface-soil concentration that corresponds with increased loading rates and quantities of land-applied PFAS contaminated biosolids.⁵⁰ Data from these studies indicates that shorter chain-length PFAS compounds are more vertically distributed within the soil.⁵¹

⁴⁴ B. Lindstrom et al., *Application of WWTP Biosolids and Resulting Perfluorinated Compound Contamination of Surface and Well Water in Decatur, Alabama, USA*, 45 ENV'T SCI. & TECH. 8015, 8019–21 (2011).

⁴⁵ Gwynn R. Johnson, *PFAS in Soil and Groundwater Following Historical Land Application of Biosolids*, 211 WATER RESEARCH 118035 (2022), at 2.

⁴⁶ Ross W. Helmer, et al., *Per- and Polyfluorinated cycling within Michigan: Contaminated sites, landfills, and wastewater treatment plants*, 210 Water Research (Feb. 2022), <https://doi.org/10.1016/j.watres.2021.117983> (last visited Jan. 9, 2025).

⁴⁷ *Id.*; see also Pippa Neil & David Megson, *Landfill leachate treatment process is transforming and releasing banned per- and polyfluoroalkyl substances to UK water*, *Front. Water* 6:1480241. doi: 10.3389/frwa.2024.1480241 (last visited Jan. 9, 2025).

⁴⁸ Charles E. Schaefer, et al., *Release of poly- and perfluoroalkyl substances from finished biosolids in soil mesocosms*, 217 Water Research 118405 (June 2022).

⁴⁹ Garrett W. Link, et al., *Per- and polyfluoroalkyl substances (PFAS) in final treated solids (biosolids) from 190 Michigan wastewater treatment plants*, 463 *J. of Hazardous Materials* 132734 (Feb. 2024), <https://doi.org/10.1016/j.jhazmat.2023.132734> (last visited Jan. 9, 2025).

⁵⁰ *Id.* at 3; see also J.G. Sepulvado et al., *Occurrence and Fate of Perfluorochemicals in Soil Following the Land Application of Municipal Biosolids*, 45 ENV'T SCI. & TECH. 8106 (2011).

⁵¹ *Id.*; see also B. Lindstrom et al., *Application of WWTP Biosolids and Resulting Perfluorinated Compound Contamination of Surface and Well Water in Decatur, Alabama, USA*, 45 ENV'T SCI. & TECH. 8015, 8019–21 (2011);

When PFAS-contaminated biosolids are land-applied, these chemicals accumulate in the soil and infiltrate food systems, perpetuating a cycle of contamination that jeopardizes public health and environmental integrity. Plants are capable of uptaking PFAS from contaminated soil,⁵² and studies provide a basis for estimating the amount of PFAS accumulation in such vegetation.⁵³ Scientific evidence indicates that crops like lettuce, carrots, and potatoes accumulate PFAS in their tissues, creating a direct pathway for these toxic substances to enter the human food chain.⁵⁴ Virginia permits cultivation of food crops for direct human consumption on farmlands where biosolids are applied.

Livestock that graze on PFAS-contaminated forage or drink water from polluted sources are also at risk, leading to the contamination of dairy and meat products. For example, milk from a Maine dairy farm where biosolids were applied was found to contain PFAS concentrations exceeding 1,400 parts per trillion, far above levels considered safe for human consumption.⁵⁵

The absence of PFAS-specific limitations or testing requirements violates the Virginia Pollution Abatement Act's mandate to ensure state waters and lands are “free from substances inimical or harmful to human, animal, plant, or aquatic life.” DEQ must act to regulate PFAS in biosolids to prevent the accumulation of these hazardous chemicals in Virginia soils and food supplies. The failure to regulate in this space would be an abdication of responsibility.

3. Contamination of drinking water, groundwater, and surface water.

see also Wenfeng Wang, et al., *Uptake and Accumulation of Per- and Polyfluoroalkyl Substances in Plants*, 261 *Chemosphere* 127584 (Dec. 2020), <https://doi.org/10.1016/j.chemosphere.2020.127584> (last visited Jan. 9, 2025).

⁵² Steven Lasee, et al., *The effects of soil organic carbon content on plant uptake of soil perfluoro alkyl acids (PFAAs) and the potential regulatory implications*, 40 *Envt. Toxicology and Chem.* 3:1 (March 2021), <https://doi.org/10.1002/etc.4786> (last visited Jan. 9, 2025); *see also* Andrea C. Blaine, et al., *Uptake of perfluoroalkyl acids into edible crops via land applied biosolids: Field and greenhouse studies*, 47 *Envt. Science & Tech.* 24 (Nov. 2013), https://pubs.acs.org/doi/suppl/10.1021/es403094q/suppl_file/es403094q_si_001.pdf (last visited Jan. 9, 2025).

⁵³ EPA, *IRIS Toxicological Review of Perfluorohexanoic Acid [PFHxA, CASRN 307-24-4] and Related Salts* (April 2023), <https://iris.epa.gov/static/pdfs/0704tr.pdf> (last visited Dec. 19, 2024) (citing Hoon Yoo et al., *Quantitative determination of perfluorochemicals and fluorotelomer alcohols in plants from biosolid-amended fields using LC/MS/MS and GC/MS*, 45 *ENV'T SCI. & TECH.* 7985-7990 (2011)).

⁵⁴ E. Bizkarguenaga et al., *Uptake of Perfluorooctanoic Acid, Perfluorooctane Sulfonate, and Perfluorooctane Sulfonamide by Carrot and Lettuce from Compost-Amended Soil*, 571 *SCI. TOTAL ENV'T* 444 (2016).

⁵⁵ Janine Kowalczyk et al., *Transfer of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) From Contaminated Feed into Milk and Meat of Sheep: Pilot Study*, 63 *ARCHIVES ENV'T CONTAMINATION & TOXICOLOGY* 288 (2012); *see also* Janine Kowalczyk, et al., *Absorption, Distribution, and Milk Secretion of the Perfluoroalkyl Acids PFBS, PFHxS, PFOS, and PFOA by Dairy Cows Fed Naturally Contaminated Feed*, 61 *J. of Agricultural and Food Chemistry* 12 (2013), <https://doi.org/10.1021/jf304680j> (last visited Jan. 9, 2025); *see also* Janine Kowalczyk, et al., *Transfer of Per- and Polyfluoroalkyl Substances (PFAS) from Feed into the Eggs of Laying Hens. Part 2: Toxikinetetic Results Including the Role of Precursors*, 68 *J. of Agricultural and Food Chemistry* 45 (2020), <https://doi.org/10.1021/acs.jafc.0c04485> (last visited Jan. 9, 2025).

DEQ’s sampling of surface waters demonstrates toxic PFAS contamination exceeding EPA thresholds for protection of human health in the area affected by Synagro’s operations in Westmoreland County. The majority of the currently approved sites and those to be approved through the proposed modification are located within the Nomini Creek watershed in Westmoreland County.⁵⁶ Other sites are situated within the watersheds for Lower Machodoc Creek, Yeocomico River, and other tidal and nontidal tributaries of the Potomac and Rappahannock rivers. As recently as July 18, 2024, DEQ sampled Buckner Creek, a tidal tributary of Nomini Creek, finding 2.47 ppt PFOA and 2.46 ppt PFOS and identifying PFAS contamination of surface waters within the Nomini Creek watershed.⁵⁷ These observed levels of PFAS contamination exceed, by orders of magnitude, the EPA’s proposed Draft National Recommended Human Health Ambient Water Quality Criteria for PFOA and PFOS.⁵⁸ These pollution thresholds were developed by the EPA to “protect the general population from adverse health effects [including cancers and other adverse noncancer disease] due to ingesting water, fish, and shellfish from inland and nearshore water bodies” and are based upon the “latest scientific knowledge regarding the human health effects, exposure information, and bioaccumulation potential” of PFOA and PFOS chemicals.⁵⁹ **In sum, DEQ has already identified ambient PFAS contamination in an area impacted by Synagro’s status quo biosolids operation that greatly exceeds acceptable levels of risk to human health through consumption of fish and shellfish alone.**

	Buckner Creek Ambient Water Quality PFAS Contamination*	EPA Human Health Ambient Water Quality Criteria (Fish Cons. Only)**
PFOA	2.47 ppt	0.0036 ppt
PFOS	2.46 ppt	0.07 ppt

* DEQ Station ID:1ABUB000.94; Sample Date: 07/18/2024

** EPA, Fact Sheet: Draft National Recommended Human Health Ambient Water Quality Criteria for PFOA, PFOS, and PFBS (December, 2024)

⁵⁶ Virginia Department of Environmental Quality, Map of Currently Permitted and Proposed Application Sites, VPA00835 – Synagro Central, LLC -Westmoreland County (Last accessed Jan. 7, 2025). Available at <https://www.deq.virginia.gov/home/showpublisheddocument/25411/638610449204430000>.

⁵⁷ Virginia Department of Environmental Quality, Statewide PFAS Sampling Dashboard, Station ID:1ABUB000.94, Sample Date: 07/18/2024 (Last accessed Jan. 7, 2025). Available at <https://www.deq.virginia.gov/topics-of-interest/per-and-polyfluoroalkyl-substances-pfas>.

⁵⁸ U.S. Environmental Protection Agency, Technical Fact Sheet: Draft National Recommended Human Health Ambient Water Quality Criteria for PFOA, PFOS, and PFBS (December, 2024) (Last accessed Jan. 7, 2025). Available at <https://www.epa.gov/system/files/documents/2024-12/draft-hhc-pfas-tech-fact-sheet.pdf>.

⁵⁹ *Id.*; see also Juliane Brown, et al., *Assessing Human Health Risks from Per- and Polyfluoroalkyl Substance (PFAS)-Impacted Vegetable Consumption: A Tiered Modeling Approach*, 54 *Env. Science & Technology* 23 (Nov. 2020), <https://doi.org/10.1021/acs.est.0c03411> (last visited Jan. 9, 2025).

C. Contaminated soil, water, and food harm plants, aquatic life, human health, and the environment

The EPA published draft human health criteria for PFAS, PFOA, and PFBS, that relies on extensive scientific literature linking PFAS to harmful cancerous and noncancerous diseases.⁶⁰ Studies conducted on the effects of PFAS has linked them to developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, lower birth weight and size, obesity, decreased immune response to vaccines, reduced hormone levels, and delayed puberty.⁶¹ The EPA, through the Center for Public Health and Environmental Assessment, found that, “overall, the available evidence indicates that PFDA⁶² exposure is likely to cause liver, immune, developmental, and male and female reproductive effects in humans, given sufficient exposure conditions.⁶³

More specifically, PFOA is classified as a probable human carcinogen. Long-term exposure has been associated with kidney and testicular cancer, as demonstrated in epidemiological studies and supported by toxicological evaluations conducted under the Integrated Risk Information System (IRIS) program.⁶⁴ Further, “three high or medium confidence animal carcinogenicity studies indicate that PFOA exposure can lead to multiple

⁶⁰ EPA, Technical Fact Sheet, Draft Human Health Criteria for PFAS, PFOA, and PFBS (Dec. 2024), <https://www.epa.gov/system/files/documents/2024-12/draft-hhc-pfas-tech-fact-sheet.pdf> (last visited Jan. 9, 2025); EPA, Draft Human Health Ambient Water Quality Criteria for PFOA (Dec. 2024), <https://www.epa.gov/system/files/documents/2024-12/pfoa-hhc-draft.pdf> (last visited Jan. 9, 2025); EPA, Draft Human Health Ambient Water Quality Criteria for PFOS (Dec. 2024), <https://www.epa.gov/system/files/documents/2024-12/pfos-hhc-draft.pdf> (last visited Jan. 9, 2025); EPA, Draft Human Health Ambient Water Quality Criteria for PFBS (Dec. 2024), <https://www.epa.gov/system/files/documents/2024-12/pfbs-hhc-draft.pdf> (last visited Jan. 9, 2025); EPA, Draft National Bioaccumulation Factors Spreadsheet (Dec. 2024).

⁶¹ Arlene Blum et al., *The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)*, 123 ENV'T HEALTH PERSP. A107-A111 (May 2015); see also EPA, *FACT SHEET PFOA & PFOS Drinking Water Health Advisories* (Nov. 2016), <https://bit.ly/37o3eWp>; see also Southern Environmental Law Center, *Comments on the Periodic Review of the Virginia Pollution Abatement (VPA) Permit Regulations (9 VAC 25-32)* (June 15, 2020).

⁶² A subset of PFAS.

⁶³ EPA, *IRIS Toxicological Review of Perfluorodecanoic Acid (PFDA) and Related Salts* (July 2024), https://iris.epa.gov/static/pdfs/0702_summary.pdf (last visited Dec. 19, 2024).

⁶⁴ EPA, *IRIS Human Health Toxicity Assessment for Perfluorooctanoic Acid (PFOA) and Related Salts* (April 2024), <https://www.epa.gov/system/files/documents/2024-05/final-human-health-toxicity-assessment-pfoa.pdf> (last visited Dec. 20, 2024).

types of neoplastic lesions including liver adenomas⁶⁵ or carcinomas,⁶⁶ Leydig cell tumors (LCTs),⁶⁷ and pancreatic acinar cell tumors (PACTs; adenomas or adenocarcinomas).⁶⁸

EPA's IRIS Study also shows that PFAS exposure weakens immune system function, reducing the efficacy of vaccines and increasing susceptibility to infections.⁶⁹ Studies cited by the EPA show that elevated PFAS levels are associated with decreased antibody responses, posing risks to both children and adults.⁷⁰ Exposure to PFAS during pregnancy and early childhood has been associated with reduced birth weights, developmental delays in children, and impaired fertility.⁷¹ Further, PFOS has been found to distribute concentration among major organs, including the thyroid, pituitary, and pancreas.⁷² More specifically, "PFOA [] binds the serum thyroid hormone transport protein, transthyretin (TTR), causing up to a 50% inhibition of T4 binding to TTR."⁷³ These physiological and neurological effects are only a fraction of the damage science has shown that PFAS are capable of doing to the human body.

PFAS contamination from land-application of biosolids negatively affects plant and aquatic life, too, which provides another opportunity for contamination through human consumption. Studies have shown that plants absorb the PFAS in contaminated soil,⁷⁴ and those

⁶⁵ National Toxicology Program, *NTP Technical Report On The Toxicology And Carcinogenesis Studies Of Perfluorooctanoic Acid (CASRN 335-67-1) Administered In Feed To Sprague Dawley (Hsd: Sprague Dawley SD) Rats (Revised)*, NTP (2020), https://ntp.niehs.nih.gov/sites/default/files/ntp/htdocs/lt_rpts/tr598_508.pdf (last visited Dec. 20, 2024); see also Lisa B. Biegel et al., *Mechanisms of extrahepatic tumor induction by peroxisome proliferators in male CD rats*, 60 *TOXICOLOGICAL SCI.* 44-55 (2001).

⁶⁶ *Id.*

⁶⁷ John L. Butenhoff et al., *Chronic dietary toxicity and carcinogenicity study with ammonium perfluorooctanoate in Sprague-Dawley rats*, 298 *TOXICOLOGY* 1-13 (2012).

⁶⁸ National Toxicology Program, *NTP Technical Report On The Toxicology And Carcinogenesis Studies Of Perfluorooctanoic Acid (CASRN 335-67-1) Administered In Feed To Sprague Dawley (Hsd: Sprague Dawley SD) Rats (Revised)*, NTP (2020), https://ntp.niehs.nih.gov/sites/default/files/ntp/htdocs/lt_rpts/tr598_508.pdf (last visited Dec. 20, 2024); see also Lisa B. Biegel et al., *Mechanisms of extrahepatic tumor induction by peroxisome proliferators in male CD rats*, 60 *TOXICOLOGICAL SCI.* 44-55 (2001).

⁶⁹ EPA, *IRIS Human Health Toxicity Assessment for Perfluorooctanoic Acid (PFOA) and Related Salts* (April 2024), <https://www.epa.gov/system/files/documents/2024-05/final-human-health-toxicity-assessment-pfoa.pdf> (last visited Dec. 20, 2024) ("Three studies reported decreases in response to one or more vaccines in relation to higher PFOA exposure in children (Granum et al., 2013; Grandjean et al., 2012) and adults (Looker et al., 2014)").

⁷⁰ *Id.*

⁷¹ Dan Luo et al., *Associations of prenatal exposure to per- and polyfluoroalkyl substances with the neonatal birth size and hormones in the growth hormone/insulin-like growth factor axis*, 55 *ENV'T SCI. & TECH.* 11859-11873 (2021); see also Bin Wang et al., *Perfluoroalkyl substances and endometriosis-related infertility in Chinese women*, 102 *ENV'T INT'L* 207-212 (2017).

⁷² Barbara Pirali et al., *Perfluorooctane sulfonate and perfluorooctanoic acid in surgical thyroid specimens of patients with thyroid diseases*, 19 *THYROID* 1407-1412 (2009).

⁷³ Jana M. Weiss et al., *Competitive Binding of Poly- and Perfluorinated Compounds to the Thyroid Hormone Transport Protein Transthyretin*, 109 *TOXICOLOGICAL SCI.* 206-216 (2009).

⁷⁴ Ekhiñe Bizkarguenaga et al., *Uptake of Perfluorooctanoic Acid, Perfluorooctane Sulfonate and Perfluorooctane Sulfonamide by Carrot and Lettuce from Compost Amended Soil*, 571 *SCI. TOTAL ENV'T* 444 (2016); Hoon Yoo et al., *Quantitative Determination of Perfluorochemicals and Fluorotelomer Alcohols in Plants from Biosolid Amended Fields using LC/MS/MS and GC/MS*, 45 *ENV'T SCI. & TECH.* 7985 (2011); T. Stahl et al., *Carryover of*

plants transfer PFAS to the animals who consume them.⁷⁵ Similarly, PFAS are capable of bioaccumulating in the tissues and organs of fish in contaminated waters, especially when the particular PFAS compound has a longer carbon chain length.⁷⁶ The EPA states that, “PFAS can negatively affect the survival, growth, and reproduction of aquatic organisms like fish and aquatic insects.”⁷⁷ Worse yet, “comparisons of biomagnification of individual PFAS compounds in primary consumers (e.g., mussels) and top predators (e.g., fishes) showed that the transfer and bioaccumulation of PFAS in the aquatic ecosystem increases their toxicity, highlighting the subsequent potential health risks to humans through the consumption of PFAS-contaminated fish.”⁷⁸

Issuing this permit modification without controlling PFAS ignores the scientific evidence of all the pathways of exposure to PFAS contamination from land-applied biosolids and the resulting harm to human health, aquatic life, and the environment. It is DEQ’s legal duty, under multiple statutes, but particularly under the VPA, to prevent harm to human health and the environment.⁷⁹ Allowing Synagro to expand application of PFAS-contaminated biosolids is, therefore, prohibited by the VPA.

Land application of PFAS-contaminated biosolids harms farmers, their land, and their livelihood. For instance, ranchers in Johnson County, Texas, who have not participated directly in the practice, were otherwise compelled to file a lawsuit against Synagro a year ago for land-applications of PFAS-contaminated biosolids by the company made to adjoining agricultural lands that led to harmful contamination of the plaintiffs’ own land, water, and livestock operations.⁸⁰ Farmers in Maine are also impacted by legacy PFAS contamination due to land application of biosolids, and state regulators and lawmakers have taken decisive and proactive

Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) from Soil to Plants, 57 ARCHIVES ENV’T CONTAMINATION & TOXICOLOGY 289 (2008); Mareike Lechner & Holger Knapp, *Carryover of Perfluorooctanoic Acid (PFOS) and Perfluorooctane Sulfonate (PFOS) from Soil to Plant and Distribution to the Different Plant Compartments Studied in Cultures of Carrots (Daucus Carota ssp. Sativus), Potatoes (Solanum Tuberosum), and Cucumbers (Cucumis Sativus)*, 59 J. AGRIC. & FOOD CHEMISTRY 11011 (2011).

⁷⁵ Janine Kowalczyk et al., *Transfer of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) From Contaminated Feed into Milk and Meat of Sheep: Pilot Study*, 63 ARCHIVES ENV’T CONTAMINATION & TOXICOLOGY 288 (2012); see also Andrea C. Blaine et al., *Uptake of perfluoroalkyl acids into edible crops via land applied biosolids: field and greenhouse studies*, 47 J. of ENV’T SCI. & TECH. 24 (2013).

⁷⁶ EPA, *IRIS Toxicological Review of Perfluorobutanoic Acid (PFBA, CASRN 37522-4) and Related Salts* (Dec. 2022), <https://iris.epa.gov/static/pdfs/0701tr.pdf> (last visited Dec. 29, 2024).

⁷⁷ EPA, *Final Recommended Aquatic Life Criteria and Benchmarks for Select PFAS* (Sept. 2024), <https://www.epa.gov/system/files/documents/2024-09/pfoa-pfos-pfas-final-factsheet-2024.pdf> (last visited Dec. 29, 2024).

⁷⁸ Tingting Ma et al., *Toxicity of Per- and Polyfluoroalkyl Substances to Aquatic Invertebrates, Planktons, and Microorganisms*, 19 INT’L J. ENV’T RSCH. PUB. HEALTH 24 (2022).

⁷⁹ 9 Va. Admin. Code § 25-32-30 (2022).

⁸⁰ Alejandra Martinez, *Texas farmers say sewage-based fertilizer tainted with “forever chemicals” poisoned their land and killed their livestock*, Texas Tribune (Dec. 2, 2024). Available at <https://www.texastribune.org/2024/12/02/texas-farmers-pfas-forever-chemicals-biosolids-fertilizer/> (Last accessed Jan. 9, 2025).

steps by screening food products produced by Maine farms, requiring PFAS testing of all biosolids before applications in 2019, followed by banning the practice altogether in 2022 and establishing a \$60 million fund to assist farmers who can no longer produce safe food due to PFAS contamination of their land caused by biosolids land applications.⁸¹

This growing crisis extends far beyond Texas and Maine – contaminating farmland, water resources, and agricultural products for human consumption, and otherwise driving farming families to financial ruin. In 2022, for example, the State of Michigan ordered a dairy farmer to cease operations due to dangerous levels of contamination caused by land application of PFAS-contaminated biosolids.⁸² Indeed, state lawmakers and regulators are taking action – without waiting on EPA to regulate PFAS in biosolids – to ascertain and impose restrictions on PFAS contamination of biosolids and their land application. Michigan, New Hampshire, Colorado, Vermont and Massachusetts all require some form of PFAS monitoring of biosolids, with Michigan prohibiting land application of biosolids from certain sources or above certain numeric thresholds of PFAS contamination.⁸³ For its part, Maryland regulators have collected data on PFAS contamination of biosolids produced in the state; adopted Michigan’s thresholds as voluntary guidance to permitted land applications; and have implemented a moratorium on new or expanded operations to prevent further contamination.⁸⁴

Virginia DEQ can, and should, formally recognize the dangers posed to Virginians by allowing Synagro to continue land-applying PFAS contaminated biosolids. This recognition should come by way of termination of Synagro’s current permit for land-application, with

⁸¹ Marina Schaffler, ‘Forever chemicals’ on farmland are a slow-motion disaster, *The Maine Monitor* (March 13, 2022). Available at <https://themainemonitor.org/forever-chemicals-on-farmland-are-a-slow-motion-disaster/> (Last accessed Jan. 9, 2025); Tom Perkins, ‘I don’t know how we’ll survive’: the farmers facing ruin in Maine’s ‘forever chemicals’ crisis, *The Guardian* (Mar, 22, 2022). Available at <https://www.theguardian.com/environment/2022/mar/22/i-dont-know-how-well-survive-the-farmers-facing-ruin-in-americas-forever-chemicals-crisis> (Last accessed Jan. 9, 2025); Kirsten Lie-Nielsen, PFAS Shut Maine Farms Down. Now, Some Are Rebounding, *Civil Eats* (Oct. 2, 2023). Available at <https://civileats.com/2023/10/02/pfas-shut-maine-farms-down-now-some-are-rebounding/> (Last accessed Jan. 9, 2025); Maine Department of Environmental Protection, DEP Announces Testing of All Sludge Materials Before Land Application (March 22, 2019). Available at <https://www.maine.gov/dep/news/news.html?id=1186570> (Last accessed Jan. 8, 2025); Public Law, 2021, Chapter 641, Effective August 8, 2022: An Act To Prevent the Further Contamination of the Soils and Waters of the State with So-called Forever Chemicals; Public Law 2021, Chapter 635, Title 7, Chapter 10-D, Fund to Address PFAS Contamination; Maine Department of Agriculture, Conservation & Forestry, *Fund to Address PFAS Contamination*. Available at <https://www.maine.gov/dacf/ag/pfas/pfas-fund.shtml> (Last accessed Jan. 9 2025).

⁸² Teresa Homsí, *This farmer's livelihood was ruined by PFAS-contaminated fertilizer that few Midwest states test for* (March 11, 2024), *Harvest Public Media*. Available at <https://nebraskapublicmedia.org/en/news/news-articles/this-farmers-livelihood-was-ruined-by-pfas-contaminated-fertilizer-that-few-midwest-states-test-for/> (Last Accessed Jan. 8, 2025).

⁸³ Sarah Grace Hughes, *PFAS in Biosolids: A Review of State Efforts & Opportunities for Action* (Jan. 2023), *ECOS*. Available at <https://www.ecos.org/wp-content/uploads/2023/01/PFAS-in-Biosolids-A-Review-of-State-Efforts-and-Opportunities-for-Action.pdf> (Last accessed Jan 8. 2025).

⁸⁴ *PFAS in Biosolids Regulatory Update – August 20, 2024*, Maryland Department of Environment, <https://mde.maryland.gov/PublicHealth/Pages/PFAS-in-Biosolids-Regulatory-Update.aspx> (Last accessed Jan. 9, 2025).

reissuance only occurring once PFAS standards are in place to protect human, environmental, aquatic, and soil health in conformance with state law.

III. DEQ should terminate and/or revoke and reissue Permit No. VPA00835 addressing PFAS contamination in land-applied biosolids

A. DEQ should terminate Synagro’s current permit in accordance with 9VAC25-32-210

DEQ should terminate Synagro’s current permit. Synagro’s requested modification is outside the scope of when a permit modification is permissible, and actually requires a revocation and reissuance of the permit. The VPA Section 9VAC25-32-210 permits revocation in instances involving:

3. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by VPA permit modification or termination; or
4. There exists a material change in the basis on which the VPA permit was issued that requires either a temporary or a permanent reduction or elimination of any pollutant management activity controlled by the VPA permit necessary to protect human health or the environment.⁸⁵

The current permit became effective May 26, 2015.⁸⁶ Since May 2015, much research has been published regarding the negative effects of PFAS exposure and contamination.⁸⁷ Just this year, the EPA published its final regulation containing limits for certain PFAS in drinking water.⁸⁸ With all this information available, ignoring the dangers of PFAS contamination today, in 2025, is a dereliction of duty to protect the public health and waterways of the State.

Pursuant to 9VAC-25-32-210, this new information regarding the dangers of PFAS contamination in biosolids is both a material change to the facts underlying the permit and constitutes a “currently permitted activity” endangering human health and the environment. These facts warrant more than a permit modification. This information and emerging science are certainly what the drafters of the VPA intended to capture when they created a section permitting revocation of permits due to “material changes” in the facts underlying the permit limits. Revocation, and subsequent reissuance addressing PFAS contamination in biosolids, is the only way DEQ may adequately protect human health and the environment in conformance with state law.

⁸⁵ 9 Va. Admin. Code § 25-32-210 (2022).

⁸⁶ VPA Permit No. 00835, *Final Permit and Fact Sheet*.

⁸⁷ See *supra* Section I(3); see also EPA, *Research on Per- and PolyFluroalkyl Substances (PFAS)*, <https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas#Risk> (last visited Dec. 19, 2024).

⁸⁸ 40 C.F.R. pt.141 & 142 (April 26, 2024).

Furthermore, the VPA requires compliance with Virginia Water Quality Standards laid out in Va. Ann. Code § 62.1-44.15.⁸⁹ More specifically, Synagro’s permit for land application of biosolids requires that “the operation of the facilities of the owner permitted herein shall not contravene the Water Quality Standards, as adopted and amended by the Board, or any provision of the Water Control Law.”⁹⁰ Virginia has set its water quality standards to require that

State waters, including wetlands, shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.⁹¹

Based on the scientific studies and evidence discussed throughout this comment, the Department should conclude that land application of biosolids, and the soil and water contamination that results, is “inimical or harmful to human, animal, plant, [and] aquatic life.” To grant a major permit modification that will double land application of harmful biosolids without consideration of the information available about PFAS is a violation of the spirit and letter of the VPA and DEQ’s duties relating to water quality standards in Virginia. Synagro’s application for modification - or in practical terms, the request to expand its operation - would be more appropriately addressed through permit revocation and reissuance, so that DEQ may consider how, if at all, continued land applications can be regulated to adequately prevent harmful PFAS contamination of farm fields, surface waters, and other resources and to protect human health.

B. DEQ should revoke and reissue this permit with PFAS-responsive conditions pursuant to the Department’s “case-by-case” authority provided by the VPA

1. A new permit would allow DEQ to apply more stringent permitting requirements that address PFAS pursuant to the VPA

Pursuant to 9VAC25-32-60, the Department may, on a case-by-case basis, require sampling of additional pollutants not explicitly listed for regulation pursuant to VPA Part IX.⁹² In a reissuance of this Permit for Synagro, the Department could, and should, implement PFAS restrictions⁹³ under this “case-by-case” authority. CLA submitted a FOIA request to the Department seeking examples of where this VPA provision was employed by DEQ historically, to determine the criteria for setting limits on unregulated pollutants.

⁸⁹ 9 Va. Admin. Code § 25-32-10 et seq.

⁹⁰ See VPA Permit No. 00835, *Final Permit*, at 24; see also VPA Permit No. 00835, *Permit Modification Final Permit* (2019), at 24.

⁹¹ 9 Va. Admin. Code § 25-260-20 (2010).

⁹² 9 Va. Admin. Code § 25-32-60(F)(2) (2022).

⁹³ DEQ must address PFAS contamination in order to comply with narrative water quality standards, but the authors of this comment are open to many approaches to this.

Two of the permits provided by the Department require monitoring and impose limitations for Aluminum⁹⁴—a pollutant, like PFAS, not explicitly listed for regulation by the VPA.⁹⁵ Both permits implement monitoring and tracking requirements on aluminum concentrations in water treatment plant residuals from water treatment plants that use aluminum-based coagulants.⁹⁶ The Department cites to Guidance Memorandum (GM) No. 95-002 for this requirement.⁹⁷

The last permit provided by the Department in response to CLA’s FOIA requests includes the following statement in its fact sheet:

The lack of change in requirements, however, is not representative of a lack of additional study. Research into the safety and use of biosolids as an agricultural soil amendment is ongoing. The Clean Water Act (Section 405(d)(2)(C)) requires the federal Environmental Protection Agency (EPA) to review existing sewage sludge regulations at least every two years. The purpose of the review is to identify additional pollutants that may be present in sewage sludge, and if appropriate to develop regulations for those pollutants. DEQ, along with VDH, monitor the progress of the research conducted by EPA in this regard, and if necessary, will respond to significant findings with recommendations to modify the VPA regulation. The latest biennial review for which EPA has finalized results is 2020-2021. The results of the EPA reviews are available at <https://www.epa.gov/biosolids/biennial-reviews-sewage-sludge-standards>.⁹⁸

Further, the permit fact sheet for this permit includes this statement about PFAS:

EPA is still developing a framework for comparative PFAS exposure analysis, such as the differences between PFAS exposure in drinking water versus less direct exposure through land application of biosolids. These PFAS toxicity reference values will be used to inform the risk analysis, and subsequently identify what control measures are appropriate for different activities.

EPA’s PFAS Strategic Roadmap calls for completion of the risk assessment for PFAS in biosolids by the end of 2024. The risk assessment will serve as the basis for determining whether regulation of PFAS in biosolids permits is appropriate.

⁹⁴ VPA Permit No. VPA04030, *Final Permit and Permit Fact sheet for Virginia Tech Shenandoah Valley AREC Augusta County* (effective Oct. 1, 2024); VPA Permit No. VPA04031, *Final Permit and Permit Fact sheet for Virginia Tech Shenandoah Valley AREC Rockbridge County* (effective Oct. 1, 2024).

⁹⁵ 9 Va. Admin. Code § 25-32-356 (2013) (see tables).

⁹⁶ *Id.*

⁹⁷ VA Dep’t of Env’t Quality, *Guidance Document for Reviewing VPA Applications, Land Application of Water Treatment Plant Residuals*, GM95-002, https://townhall.virginia.gov/l/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\440\GDoc_DEQ_1357_v1.pdf (last visited Jan. 3, 2025).

⁹⁸ VPA Permit No. VPA04028, *Permit Fact sheet for Middle Peninsula Treatment, Inc.* (effective Dec. 16, 2024).

Regarding the information provided to landowners receiving biosolids on their property, the Fact Sheet that DEQ requires be provided to the landowner by the land applier includes a reference to EPA's work to determine if the presence of other constituents in biosolids would warrant further testing requirements before land application. DEQ does plan to update this Fact Sheet once EPA can provide more substantive information than is currently available regarding level of risk.⁹⁹

Two conclusions arise from the permits provided in response to this FOIA request: (1) Department guidance based on science is a good source of information to consider in adding pollutant limitations to permits issued under the VPA, and (2) the Department is aware of PFAS contamination in biosolids, but has, for some reason, decided to wait until the EPA regulates the issue rather than publishing its own guidance document. **By comparing to the Department's success in regulating aluminum based on a 1995 Guidance document, with the Department's acknowledgement of the dangers of PFAS in a December 2024 permit fact sheet, it is clear that the Department already has the resources available to it to address PFAS and incorporate PFAS conditions in permits such as Synagro's.**

More specifically, the Department cites EPA's data on PFAS contamination in its renunciation of the responsibility to regulate PFAS in these permits until the EPA announces its risk assessment.¹⁰⁰ The EPA stated in its 2020-2021 Biennial review of 40 CFR Part 503 that, "[study] results indicate that biosolids and irrigation water are both important sources of PFAS present in the soils for all of the study sites."¹⁰¹ The Department has had this information about PFAS contamination in biosolids, at the very least, since 2021. **This is the exact type of information that should be used to create additional pollutant conditions in Synagro's VPA permit. A modification is not the proper forum for this type of additional requirement, and the Department should employ its ability to regulate, on a case-by-case basis, additional known dangerous pollutants by revoking and reissuing Synagro's permit, accordingly.**

- 2. Synagro should be required to submit an application for reissuance that considers PFAS when claiming that biosolids are nonhazardous**

⁹⁹ *Id.*

¹⁰⁰ EPA, *Biennial Review of 40 CFR part 503, To Fulfill Clean Water Act Section 405(d)(2)(C)*, Biosolids Biennial Rep. No. 9 (Reporting Period 2020-2021), <https://www.epa.gov/system/files/documents/2022-12/2020-2021-biennial-report.pdf> (last visited Jan. 3, 2025).

¹⁰¹ *Id.*

Pursuant to 9VAC25-32-60, Permittees must include in their application a statement claiming that the biosolids used in land-application are nonhazardous.¹⁰² Specifically, 9VAC25-32-60 requires:

- (3)(c) A statement that the biosolids is nonhazardous; a documentation statement for treatment and quality; and a description of how treated biosolids meets other standards in accordance with this regulation...[and that]
- (4) Samples shall be collected and analyzed in accordance with analytical methods specified in 40 CFR Part 503...¹⁰³

Synagro’s application for modification and all supporting documents submitted to DEQ do not mention PFAS sampling or potential PFAS contamination of biosolids.¹⁰⁴ Additionally, for some reason, Synagro’s original permit application submitted in 2014 lists “N/A” in response to the section requiring a “nonhazardous declaration statement” for each biosolid.¹⁰⁵ Therefore, Synagro has failed to declare¹⁰⁶ that its biosolids are nonhazardous in 2014, and did so again in its most-recent application for modification.

Furthermore, 40 CFR Part 503 includes methods to collect PFAS data from biosolids used in land application.¹⁰⁷ Synagro’s application for modification fails to consider its duty to include a nonhazardous declaration with regard to samples collected in accordance with analytical methods under Part 503. Based on information about Synagro’s sampling for PFAS in its biosolids, it appears Synagro would be unable to even make this declaration because the company has not conducted or disclosed testing for PFAS in the biosolids applied in Westmoreland County. **Therefore, a modification is not the correct forum for DEQ to add PFAS monitoring requirements to the permit, and DEQ should revoke and reissue Synagro’s permit, requiring Synagro draft a nonhazardous declaration using Method 1633A to sample its biosolids for PFAS.**

IV. DEQ must reject Synagro’s request for modification.

DEQ must reject Synagro’s request for modification. DEQ has a duty under the Virginia Pollution Abatement Act to protect “the physical, chemical or biological properties of state

¹⁰² 9 Va. Admin. Code § 25-32-60 (2022).

¹⁰³ *Id.*

¹⁰⁴ This statement is based on the documents readily available on DEQ’s website where it public notices draft permits under the VPA, <https://www.deq.virginia.gov/permits/public-notices/water/land-application-virginia-pollution-abatement-vpa> (last visited Jan. 3, 2025).

¹⁰⁵ VPA Permit No. VPA00835, *Permit Application* (received by VA Dep’t of Env’t Quality Aug. 26, 2014).

¹⁰⁶ Synagro has not only failed to declare that its biosolids are nonhazardous, but has entirely failed to respond to this requirement.

¹⁰⁷ EPA, *CWA Analytical Methods for Per- and Poly-fluorinated Alkyl Substances (PFAS), Method 1633A* (last updated Dec. 9, 2024), <https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas#background> (last visited Jan. 3, 2025).

waters” in a manner that prevents them from being “detrimental to the public health, or to animal or aquatic life, or to the use of such waters for domestic or industrial consumption, or for recreation, or for other uses.”¹⁰⁸ Further, under Virginia’s general water quality criteria, state waters must be “be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.”¹⁰⁹

PFAS in biosolids are absolutely included among the categories of substances “detrimental to public health, animal or aquatic life” and “substances attributable to sewage, industrial waste, or other waste concentrations[.]” Based solely on the information provided above, which is non-exhaustive, it is clear that harmful PFAS are contaminating the environment through land-application of contaminated biosolids in Virginia. However, DEQ has abdicated its state legal duties and authorities to regulate the harm that PFAS in land-applied biosolids poses to Virginia’s public health and environment in favor staking out a still vague policy that the Department will not act on until the Environmental Protection Agency requires it.¹¹⁰

Worse yet, Synagro’s request for modification, and the draft permit, as it stands, would substantially increase potential contamination of soil, water, and food in Westmoreland County.¹¹¹ Should DEQ permit Synagro to substantially increase the acreage of land application of its PFAS contaminated biosolids, especially without requiring Synagro to monitor, report, and control PFAS levels, it would be violating the language and the spirit of the VPA, and DEQ’s duty to assure compliance with state water quality standards. Without revocation and reissuance, DEQ must, at the very least, avoid substantially increasing PFAS contamination in Westmoreland County and corresponding risk of harm to its residents. The concerns raised here are applicable to other modifications to expand operations or otherwise permit continued application of contaminated biosolids in Virginia.

V. It is past time for DEQ inform landowners of PFAS contamination in Synagro’s biosolids

Permitting Synagro to substantially expand its land application of biosolids without any restrictions on PFAS discharges will cause damage to the soil, waterways, groundwater, aquatic life, and food in Westmoreland County. Further, DEQ leaves Virginia farmers in the dark about the potential PFAS contamination to their land, agricultural products, and drinking water by failing to address PFAS in the fact sheets distributed to landowners working with VPA permit-

¹⁰⁸ 9 Va. Admin. Code § 25-32-30 (2022).

¹⁰⁹ 9 Va. Admin. Code § 25-260-20(A) (2010).

¹¹⁰ VPA Permit No. VPA04028, *Permit Fact Sheet for Middle Peninsula Treatment, Inc.* (effective Dec. 16, 2024).

¹¹¹ VPA Permit No. 00835, *Draft Permit* (Dec. 10, 2024).

holders, like Synagro.¹¹² Without warning about the potential PFAS contamination in the land-applied biosolids, farmers in Virginia are unable to independently monitor their land and crops for contamination.¹¹³

The fact sheet distributed to landowners who participate in Synagro’s land-application of biosolids contains the following statement:

The U.S. Environmental Protection Agency has conducted surveys of sewage sludge throughout the United States to evaluate whether there are other constituents found in biosolids that would warrant further testing requirements before land application. Additional research is being conducted to determine not only the amount present, but also whether these amounts pose significant concerns. DEQ monitors the ongoing work of EPA in this respect, and if necessary, will respond to these findings with additions to the list of regulated parameters.¹¹⁴

In April 2024, the EPA issued drinking water standards maximum contaminant levels (MCL) of PFOS and PFOA.¹¹⁵ In December 2024, stakeholders prepared a Report for the EPA on Issues Related to PFAS and Biosolids, following the EPA’s contracting of a third-party company called Ross Strategic.¹¹⁶ The Draft Permit at issue was released on December 11, 2024. However, “As of November 2024, [the Virginia Department of Health] has notified DEQ of 34 drinking water systems with exceedances of the PFAS MCLs.” If DEQ is waiting on the EPA to recognize the dangers of PFAS in places beyond drinking water, specifically in land-applied biosolids, then there is no need to wait any longer. The EPA’s commissioning of the Report from Ross Strategic is clear: it is high time that DEQ “respond” to findings with additional regulated parameters.¹¹⁷

Landowners deserve to know about any and all of the known, dangerous substances that are likely to be contaminating biosolids land-applied in Virginia. DEQ’s fact sheet only informs participating landowners of total kjeldahl nitrogen, ammonia nitrogen, nitrates, total phosphorus, total potassium, arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, percent solids, volatile solids, pH, CaCO₃ in lime stabilized solids, alkalinity as CaCO₃, and

¹¹² VA Dep’t of Env. Quality, *Biosolids Frequently Asked Questions* (last updated July 2015), <https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:3e6eb4ff-e38f-4220-9053-e89cca5d9076> (last visited Dec. 30, 2024) (authors received this document from DEQ in response to a FOIA request seeking the fact sheets distributed to landowners who agree to receive biosolids from Synagro for land-application).

¹¹³ Teresa Homs, Nebraska Public Media, *Farmer’s Livelihood Ruined by PFAS-Contaminated Fertilizer* (March 11, 2024), <https://nebraskapublicmedia.org/en/news/news-articles/this-farmers-livelihood-was-ruined-by-pfas-contaminated-fertilizer-that-few-midwest-states-test-for/> (last visited Jan. 9, 2025).

¹¹⁴ *Id.*

¹¹⁵ 89 C.F.R. 49102 (April 2024).

¹¹⁶ Ross Strategic, *Stakeholder Meeting Facilitation for Issues Related to PFAS and Biosolids*, EPA Doc. 820S24002, <https://www.epa.gov/system/files/documents/2024-12/facilitation-issues-pfas-biosolids.pdf> (last visited Dec. 30, 2024).

¹¹⁷ More discussion *infra* on EPA’s timeline in regulating PFAS, and how Virginia has fallen behind.

PCBs.¹¹⁸ Without even basic information regarding the potential contamination by PFAS, landowners have no direction even if they wanted to conduct their own soil and water sampling.¹¹⁹ This lack of information makes it impossible for landowners to truly provide informed consent in receiving biosolids from Synagro, or any other company that obtains a permit from DEQ for land-application through the VPA permitting program.¹²⁰

VI. Conclusion and Requests

Biosolids used for land-application are contaminated with PFAS. PFAS are harmful to human health and to Virginia's waterways, soil, aquatic life, and environmental quality as a whole. DEQ should terminate Synagro's current permit for land application of biosolids in Westmoreland County. Then, DEQ should comply with its legal duties and authorities in the VPA to address PFAS-contamination in revising Synagro's permit so that it complies with narrative standards and other legal requirements to protect water quality, public health, and the environment. Moreover, DEQ must, at the very least, reject Synagro's request for modification to prevent substantially expanding its operation of land-applying PFAS-contaminated biosolids, worsening potential harm in Westmoreland County.

Please see documents accompanying this comment. It is the intent of the authors that the documents accompanying this comment are entered into the administrative record as attachments.

The undersigned parties thank Virginia DEQ for the opportunity to submit these public comments.

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¹¹⁸ VA Dep't of Env. Quality, *Biosolids Frequently Asked Questions* (last updated July 2015), <https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:3e6eb4ff-e38f-4220-9053-e89cca5d9076> (last visited Dec. 30, 2024).

¹¹⁹ This lack of information explains the author's inability to obtain soil and water samples from participating landowners demonstrating PFAS contamination.

¹²⁰ The author recognizes DEQ's statement in the fact sheet of Permit No. VPA04028 regarding the addition of PFAS to fact sheets distributed to landowners once the EPA announces its risk assessment. However, this is not enough in the face of all the science EPA has provided on PFAS, which the Department cites to (EPA's "Biennial Review of 40 CFR Part 503").

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