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Preliminary
Effluent Guidelines
Program Plan 16

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Abbreviations

BAT	best available technology economically achievable
BCT	best conventional pollutant control technology
BOD_5	biochemical oxygen demand, 5-day
BPT	best practicable control technology currently available
CAFO	concentrated animal feed operation
CFR	Code of Federal Regulations
CWA	Clean Water Act
CWT	centralized waste treatment
DCN	document control number
DMR	discharge monitoring report
EJ	environmental justice
ELGs	effluent limitations guidelines and standards
EPA	United States Environmental Protection Agency
EV	electric vehicle
FRN	Federal Register notice
ICIS	Integrated Compliance Information System
ICR	Information Collection Request
LBY	pounds per year
MI EGLE	Michigan Department of Environment, Great Lakes, and Energy
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
NSPS	new source performance standards
OWA	ordered weighted average
PFAS	per-and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluoroctane sulfonate
POTW	publicly owned treatment works
PSES	pretreatment standards for existing sources
PSNS	pretreatment standards for new sources
PSC	point source category
PTFE	polytetrafluoroethylene
SIC	Standard Industrial Classification
TRI	Toxics Release Inventory
TWPE	toxic-weighted pound equivalent

1. Executive Summary

The United States Environmental Protection Agency prepares Preliminary Effluent Guidelines Program Plans pursuant to Clean Water Act (CWA) section 304(m). Preliminary plans provide a description of the EPA's annual review of effluent guidelines and pretreatment standards, consistent with CWA sections 301(d), 304(b), 304(g), 304(m), and 307(b). From these reviews, the EPA identifies in preliminary plans any industrial categories where new or revised effluent guidelines and pretreatment standards are warranted and provides a schedule for such rulemakings. The EPA also uses preliminary plans to present any new or existing industrial categories the Agency selects for further review and analysis. Additionally, the EPA describes any analyses and tools the Agency is developing to further improve its Effluent Guidelines Program Plan process or effluent guidelines and pretreatment standards regulatory process. The effluent guidelines program encourages innovation in wastewater treatment technology and the Effluent Guidelines Program Plan process helps the EPA effectively implement the program.

Preliminary Effluent Guidelines Program Plan 16 (Preliminary Plan 16) announces that the EPA intends to initiate several new studies. After collecting and analyzing data, as described in this Preliminary Plan, the EPA intends to initiate detailed studies of the Battery Manufacturing Category (40 CFR part 461), the Centralized Waste Treatment Category (40 CFR part 437), the Oil and Gas Extraction Category (40 CFR part 435), and industrial facilities that process per- and polyfluoroalkyl substances (PFAS) into formulations for applications in commerce. The purpose of these studies is to collect information on pollutant discharges and their potential for treatment that enables the Agency to make an informed, reasoned decision about whether to undertake rulemaking to revise or establish new effluent guidelines and pretreatment standards.

Preliminary Plan 16 also announces that the EPA intends to initiate a generic Information Collection Request (ICR) to enable the EPA to collect data more efficiently. The EPA would seek Office of Management Budget (OMB) approval of the generic ICR for the purpose of establishing a standing information collection budget under which the EPA would collect data on facility operations; wastewater generation, treatment, and management; finances; and environmental impacts for a subset of industries to support annual reviews and decisions about future studies and rulemakings as well as regulatory development. An approved standing information collection budget would enable the EPA to collect data more efficiently than under the current industrial category-by-industrial category ICR approval approach.

Preliminary Plan 16 provides updates on three ongoing industrial category studies: 1) the Concentrated Animal Feeding Operations (CAFOs) Category (40 CFR part 412); 2) the Textile Mills Category (40 CFR part 410); and the publicly owned treatment works (POTW) influent study for PFAS.

Finally, Preliminary Plan 16 provides updates to the EPA's ongoing effluent guidelines and pretreatment standards rulemaking efforts: the Meat and Poultry Products (40 CFR part 432) Category to address nutrient discharges and the four industrial categories to address PFAS discharges: Metal Finishing (40 CFR part 433); Electroplating (40 CFR part 413); Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR part 414), and Landfills (40 CFR part 445) (see Section 7). Preliminary Plan 16 also reports that the EPA published its supplemental rulemaking to strengthen discharge limits for the Steam Electric Power Generating Category (40 CFR part 423) on May 9, 2024 (89 FR 40198).

The EPA intends to undertake the actions outlined in this Preliminary Plan and summarized above, and the commencement and pace of these activities depend on the Agency's Fiscal Year 2025 appropriations and operating plan.

The EPA invites comment on the entirety of Preliminary Plan 16, particularly on its reviews of industrial wastewater discharges and treatment technologies described in Section 5. These reviews include the 2022 and 2023 annual reviews, which consisted of ordered weighted average (OWA) rankings analyses and preliminary review of specific industrial categories. Along with any new comments, commenters who

have previously provided relevant comments or rulemaking petitions that they would like the EPA to consider in the context of Preliminary Plan 16 must resubmit them to the docket for this Plan.

2. Background

This section explains how the Effluent Guidelines Program fits into the EPA's National Water Program, provides an overview of the Effluent Guidelines Program, and summarizes the EPA's procedures for revising and developing effluent limitations guidelines and standards (ELGs) (i.e., the effluent guidelines planning process).

2.1 The Clean Water Act and the Effluent Guidelines Program

The CWA focuses on two types of controls for point source discharges of pollutants to waters of the United States: (1) technology-based controls, based on ELGs, or in the absence of ELGs for a particular point source, the best professional judgement of the permitting authority; and (2) water quality-based controls, based on applicable water quality standards.

The CWA directs the EPA to promulgate technology-based ELGs that reflect pollutant reductions achievable in categories or subcategories of industrial point sources through implementation of available treatment technologies.[1] ELGs apply both to pollutants discharged from industrial facilities to surface water (i.e., direct discharges) and to publicly owned treatment works (POTWs) (i.e., indirect discharges). The EPA's technology-based standards ensure industrial facilities with similar characteristics will, at a minimum, be required to achieve a similar amount of pollutant reduction based on effluent guidelines or pretreatment standards representing the performance of the "best" pollution control technologies, regardless of their location or the nature of their receiving water or the POTW into which they discharge.

The CWA also gives states the primary responsibility for establishing, reviewing, and revising water quality standards. Because effluent guidelines are technology-based and not specifically designed to ensure that regulated discharges meet the water quality standards of the receiving water body, the CWA requires the EPA and authorized states to establish water quality-based effluent limitations as stringent as necessary to meet water quality standards, which may be more stringent than technology-based limits for a particular discharger.[2]

To date, the EPA has promulgated ELGs for 59 industrial categories. See EPA's Industrial Effluent Guidelines[3] for more information. These ELGs apply to between 35,000 and 45,000 U.S. direct dischargers, as well as to another 129,000 facilities that discharge to POTWs. Based on pollutant reduction estimates from the ELGs, the EPA estimates that the regulations altogether prevent the discharge of over 700 billion pounds of pollutants annually.[4]

2.2 Effluent Limitations Guidelines and Pretreatment Standards Overview

The EPA promulgates technology-based limitations for conventional, toxic, and nonconventional pollutants in accordance with six statutorily prescribed levels of control with varying levels of stringency (Table 1 below). The limitations are based on the performance of specific technologies, but the regulations do not require the use of the specific control technologies on which the limitations are based.

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[1] See 33 United States Code (U.S.C.) 1311(b) and 1314(b).

[2] See 33 U.S.C. 1311(b)(1)(C).

[3] See https://www.epa.gov/eg/industrial-effluent-guidelines.

[4] Based on the difference between discharges from each point source category before ELGs promulgation and the estimated (lower) volume of discharges from each point source category after promulgation (from review of ELGs development documents).

In this way, the CWA challenges point sources subject to effluent guidelines to innovate to find less costly and more efficient technologies to meet the technology-based limits. For more information, see the EPA's [Learn about Effluent Guidelines](https://www.epa.gov/eg/learn-about-effluent-guidelines).[5]

The CWA specifies different levels of control based on the type of pollutant at issue (i.e., conventional, toxic, or nonconventional). Conventional pollutants are biochemical oxygen demand (BOD_5), total suspended solids, fecal coliform, pH, and oil and grease.[6] The EPA has identified 65 pollutants and classes of pollutants as toxic, among which 126 specific substances have been designated by the EPA as priority toxic pollutants.[7] All other pollutants are considered nonconventional.

The EPA and states implement ELGs for point sources that discharge pollutants to surface waters through National Pollutant Discharge Elimination System (NPDES) permits.[8] POTWs, states, and the EPA enforce pretreatment standards for point sources that discharge to POTWs.[9]

Table 1. Statutorily Prescribed Levels of Control

Level of Control	CWA Statutory Reference	Description
Best Practicable Control Technology Currently Available (BPT)	CWA sections 301(b)(1)(A) and 304(b)(1), 33 U.S.C. 1311(b)(1)(A) and 1314(b)(1)	The EPA develops effluent limitations based on BPT for conventional, toxic, and nonconventional pollutants. The EPA establishes BPT effluent limitations based on the average of the best performance of facilities within an industry of various ages, sizes, processes, or other common characteristics. Where existing performance is uniformly inadequate, BPT may reflect higher levels of control than currently in place in an industrial category if the Agency determines that the technology can be practically applied.
Best Conventional Pollutant Control Technology (BCT)	CWA sections 301(b)(2)(E) and 304(b)(4), 33 U.S.C. 1311(b)(2)(E) and 1314(b)(4)	The EPA develops effluent limitations based on BCT to address conventional pollutants from existing industrial point sources. The EPA establishes BCT limitations by considering the factors specified in Section 304(b)(4)(B), including a two-part "cost-reasonableness" test. This methodology was published in a Federal Register notice on July 9, 1986 (51 FR 24974).
Best Available Technology Economically Achievable (BAT)	CWA sections 301(b)(2)(A) and 304(b)(2), 33 U.S.C. 1311(b)(2)(A) and 1314(b)(2)	The EPA develops effluent limitations based on BAT for toxic and nonconventional pollutants. BAT represents the best available economically achievable performance of plants in an industrial subcategory or category. Factors considered in establishing BAT include the age of equipment and facilities involved, the process employed, the engineering aspects of control techniques or process changes, the cost of achieving such effluent reduction, non-water quality environmental impacts (including energy requirements), and such other factors as the Administrator deems appropriate. (33 U.S.C. 1314(b)(2)(B)). BAT limitations may be based on end-of-pipe wastewater treatment or effluent reductions attainable through changes in a facility's processes and operations.

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[5] See https://www.epa.gov/eg/learn-about-effluent-guidelines.
[6] See CWA section 304(a)(4), 44 FR 44501.
[7] Appendix A to Part 423, reprinted after 40 CFR Part 423.17.
[8] See CWA sections 301(a), 301(b), and 402; 33 U.S.C. 1311(a), 1311(b), and 1342.
[9] See CWA sections 307(b) and 307(c); 33 U.S.C. 1317(b) and 1317(c).

Table 1. Statutorily Prescribed Levels of Control

Level of Control	CWA Statutory Reference	Description
Standards of Performance for New Sources (NSPS)	CWA section 306, 33 U.S.C. 1316	The EPA develops effluent limitations based on NSPS for conventional, toxic, and nonconventional pollutants. NSPS reflect effluent reductions based on the best available demonstrated control technology. (33 U.S.C. 1316(a)(1)). In establishing or revising NSPS, the EPA considers the cost of achieving such effluent reduction and any non-water-quality, environmental impact, and energy requirements. (33 U.S.C. 1316(b)(1)(B)).
Pretreatment Standards for Existing Sources (PSES)	CWA section 307(b), 33 U.S.C. 1317(b)	The EPA develops PSES for nonconventional and toxic pollutants. PSES are national, uniform, technology-based standards that apply to indirect dischargers. They are designed to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. (33 U.S.C. 1317(b)(1)) The Agency considers the same factors for PSES as it does for BAT limitations. (33 U.S.C. 1314(b)(2)(B)).
Pretreatment Standards for New Sources (PSNS)	CWA section 307(c), 33 U.S.C. 1317(c)	The EPA develops PSNS for nonconventional and toxic pollutants. PSNS are national, uniform, technology-based standards that apply to new indirect dischargers. Like PSES, they are designed to prevent the discharges of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. PSNS are issued at the same time as NSPS. (33 U.S.C. 1317(c)). The Agency considers the same factors in promulgating PSNS as it considers in promulgating NSPS. (33 U.S.C. 1316(a)(1)).

2.3   Effluent Guidelines Review and Planning Process

The CWA contains multiple provisions requiring the EPA to review and revise, if appropriate, the limitations, standards, and guidelines that apply to new and existing dischargers as well as direct and indirect dischargers.

For existing direct dischargers (i.e., those who discharge to navigable waters), the CWA requires the EPA to review effluent limitations "at least every five years and, if appropriate, revise" those limitations.[10] The CWA also requires the EPA to publish regulations providing "guidelines for effluent limitations, and, at least annually thereafter, revise, if appropriate, such regulations."[11] Historically, rather than conducting 59 separate reviews every year, the EPA consolidates its review of effluent limitations into a single review activity, the "annual review" (see Section 4 for a summary of annual review activities).[12]

For indirect dischargers (i.e., those who discharge to POTWs), the CWA requires the EPA "from time to time" to publish proposed regulations establishing pretreatment standards.[13] The CWA also requires the EPA to "review at least annually . . . and, if appropriate, revise guidelines for pretreatment."[14]

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[10] See CWA section 301(d); 33 U.S.C. 1311(d).
[11] See CWA section 304(b); 33 U.S.C. 1314(b). See also *Our Children's Earth v. EPA*, 527 F.3d 842, 848-49 (9th Cir. 2008) ("Sections 304(b) and (m) require an annual review of "guidelines for effluent limitations" applicable to direct dischargers and revision "if appropriate.").
[12] *See Our Children's Earth v. EPA*, 527 F.3d 842, 849 (9th Cir. 2008) (discussing EPA's processes of combining the reviews required under sections 301(d) and 304(b)).
[13] See CWA section 307(b); 33 U.S.C. 1317(b).
[14] See CWA section 304(g); 33 U.S.C. 1314(g).

For new sources, both direct and indirect, the CWA requires the EPA to "publish (and from time to time thereafter revise) a list of categories of sources. . ." and "propose and publish regulations establishing Federal standards of performance for new sources within such category . . ."[15] The CWA further provides that, "[t]he Administrator shall, from time to time, as technology and alternatives change, revise such standards following the procedure required by this subsection for promulgation of such standards."[16]

In the 1987 Amendments to the CWA, Congress added a provision that requires the EPA to biennially publish in the Federal Register a "plan" that "establish[es] a schedule for the annual review and revision of promulgated effluent guidelines;" identifies certain categories of sources for which ELGs have not previously been published and establishes a schedule for promulgating ELGs for certain categories of sources for which such guidelines have not previously been published.[17] The biennial planning requirement was enacted after the CWA provisions regarding review and revision of effluent limitations and ELGs and informs the EPA's obligations under those provisions. When read together, these provisions require the EPA to periodically review and revise ELGs, if appropriate; and to biennially publish a plan as described above.

The EPA's annual reviews are an ongoing, iterative, and evolving process that builds on prior years' analyses and considers information that the EPA collects and develops over time. Consistent with the iterative nature of this process, the EPA's determination to advance an ELG toward potential revision is not a definitive statement of the EPA's settled intention to undertake a rulemaking. Likewise, a determination not to advance an ELG toward rulemaking is provisional, applying only "at this time." The EPA will re-examine each ELG again the next year. See also Effluent Guidelines Program Plan 14 (Plan 14), Section 2.3 for further discussion of the EPA's annual obligations (U.S. EPA, 2021a).

To increase transparency and stakeholder awareness, the EPA's biennial plans include information on its review of existing ELGs and pretreatment standards, as well as industries reviewed for potential development of new ELGs or pretreatment standards.

The EPA periodically updates the review of existing ELGs to include new analyses and data. For example, the EPA introduced a nutrient loads rankings analysis in 2017 and a review of per-and polyfluoroalkyl substances (PFAS) discharges in 2018 (U.S. EPA, 2019a). In 2019, the Agency included a cross-category concentration rankings analysis as part of the screening level review (U.S. EPA, 2021a). The Agency also used this analysis as the ranking method in 2020 along with the information collected as part of the Multi-Industry PFAS Study. In 2021, the Agency used a pollutant load rankings analysis (U.S. EPA, 2023a). For the 2022 and 2023 annual reviews, the Agency introduced the ordered weighted average (OWA) methodology to review existing ELGs.

Preliminary Plan 16 describes the EPA's ongoing effluent guidelines and pretreatment standards planning activities, including preliminary category reviews, category detailed studies, and ELGs rulemakings. For additional details, see *EPA's 2022 and 2023 Annual Review of Industrial Wastewater Discharges* and *2022 Preliminary Review of Industrial Point Source Categories* (U.S. EPA, 2024a and 2024b).

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[15] See CWA section 306(b)(1); 33 U.S.C. 1316(b)(1).
[16] See CWA section 306(b)(1)(B); 33 U.S.C. 1316(b)(1)(B).
[17] See CWA section 304(m); 33 U.S.C. 1314(m).

3. Solicitation of Public Comments

The EPA seeks public comment on all aspects of the Preliminary Plan 16. In particular, the EPA solicits comments on the following topics:

- The OWA analysis, the metrics used in the analysis to evaluate the industrial category rankings, the inclusion/exclusion of pollutant toxicity in annual review rankings, and results of the 2022 and 2023 annual rankings (Section 5.1). The EPA also solicits comments on potential refinements to the ranking method the EPA used to rank the industrial categories. Refinements could include adjusting the counts of facilities in each industrial category, changing the "flagged for PFAS" metric to a count of PFAS facilities per industrial category, and including an additional emerging contaminants metric. Another potential consideration is to include a metric for impaired waters impacted by an industrial category.

- The findings of the preliminary category reviews, specifically the findings for Battery Manufacturing, Centralized Waste Treatment, and Oil and Gas Extraction Categories. (Sections 5.2.1, 5.2.2, and 5.2.3).

- The capabilities, performance, and costs of treatment technologies for industrial wastewater to support the Agency's technology reviews (Section 5.3).

- The preliminary category review schedule (Section 5.2.4) and tools described to support the EPA's review of ELGs (Section 5.4).

- The announcement made within Preliminary Plan 16 of a generic ICR to support effluent guidelines planning and rulemakings (Section 5.4.3).

- The announcement made within Preliminary Plan 16 of an online form on the CWA methods website to request new analytical methods for wastewater and surface waters (Section 5.4.4).

- The announcements made within Preliminary Plan 16 regarding new studies (Section 5 and Section 6).

4. Summary of Annual Review Activities

Preliminary Plan 16 presents the EPA's 2022 and 2023 annual review activities, including introducing an OWA methodology to evaluate and rank industrial categories using multiple metrics. For the OWA approach, the EPA evaluated 2021 discharge monitoring report (DMR) and the Toxics Release Inventory (TRI) data and expanded the rankings analyses to include the following additional data:

- Size of the industry (i.e., number of dischargers).

- Average volume of wastewater discharged.

- The age of the regulation (i.e., the year of the ELGs promulgation or most recent substantive revision).

- Industries identified as potentially discharging PFAS.[18]

- Environmental justice (EJ) demographic data associated with the location of industrial dischargers.

The results of the OWA approach are presented in Section 5.1. Based on public comments and stakeholder input, the EPA identified three industrial categories for preliminary review: Battery Manufacturing (Section 5.2.1), Centralized Waste Treatment (CWT) (Section 5.2.2), and Oil and Gas Extraction (Section 5.2.3). The EPA also developed a category review schedule (Section 5.2.4). In addition, the EPA continued to develop and update tools to facilitate the annual review and biennial planning processes, including reviewing treatment technologies (see Section 5.3), updating the Industrial Wastewater Treatment Technology (IWTT) Database and ELG Database (see sections 5.4.1 and 5.4.2), developing a generic ICR (Section 5.4.3), and CWA analytical methods (Section 5.4.4).

The 2022 and 2023 annual reviews and the information presented in Preliminary Plan 16 build on the EPA's previous annual reviews and the EPA's previous Effluent Guidelines Program Plans.[19] Likewise, the analyses presented herein, as well as public comments received on Preliminary Plan 16, will inform the EPA's 2024 annual review and the EPA's Effluent Guidelines Program Plan 16 (Plan 16).

The EPA will describe its 2024 annual review and consideration of public comments received on Preliminary Plan 16 in Plan 16.

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[18] See PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024 at
https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf
[19] On April 11, 2023, environmental and community groups filed a petition for review of Effluent Guidelines Program Plan 15 (U.S. EPA, 2023a) in federal court. *Waterkeeper Alliance, et al. v. U.S. EPA*, No. 23-636 (9th Cir.). That case is pending as of the date of publication of this Plan.

5. Reviews of Industrial Wastewater Discharges and Treatment Technologies

This section describes the EPA's ongoing Effluent Guidelines program planning activities and analyses to identify industrial categories for potential new or revised ELGs, as well as summarizing the data sources used to complete the reviews and the limitations of those data. This section also presents findings and next steps for the associated planning activities. Since Effluent Guidelines Program Plan 15 (Plan 15, U.S. EPA, 2023a), the EPA has:

- Developed and implemented an OWA approach to rank industrial categories by multiple metrics (Section 5.1).
- Conducted preliminary category reviews of ELGs identified by public comments and stakeholder input (Section 5.2).
- Developed a preliminary category review schedule (Section 5.2.4)
- Continued to screen, prioritize, and further review specific industrial wastewater treatment technologies that may be more broadly evaluated as technology options in future studies and rulemakings (Section 5.3).
- Continued to compile wastewater treatment technology information in the IWTT Database and populate the information in the IWTT web application for public use (Section 5.4.1).
- Maintained the ELG Database, which includes information across all regulated industrial categories in a consolidated, searchable web application (Section 5.4.2).
- Developing a generic ICR to collect data for preliminary category reviews, detailed studies, and potential rulemakings (Section 5.4.3)
- Published CWA analytical methods for several new analytes of interest (Section 5.4.4).

5.1 Ordered Weighted Average Analysis of Industrial Categories

As part of the 2022 and 2023 annual reviews of the ELGs, the EPA used an OWA approach to rank industrial categories based on a composite rank that accounts for multiple metrics. A complete discussion of the OWA analysis and the rankings of the industrial categories using the OWA analysis are presented in the *EPA's 2022 and 2023 Annual Review of Industrial Wastewater Discharges* (U.S. EPA, 2024a).

5.1.1 Data Used in the OWA Analysis

The EPA evaluated the following data as part of the OWA analysis: facility counts, effluent data, and flow rate reported by facilities in 2021 on DMRs; facility counts and water releases reported by facilities in 2021 to the TRI; industries identified as potentially discharging PFAS per the 2021 PFAS Strategic Roadmap; the age of the regulation; and EJScreen demographics data. Table 2 presents the metrics developed by the EPA.

For the 2022 annual review rankings, the EPA selected all 14 metrics; and, for the 2023 annual review, the Agency removed the toxic-weighted pound equivalent (TWPE) metrics to evaluate the change in industrial category rankings when pollutant relative toxicity is not a factor. This approach allows EPA to analyze the data from a different perspective and identify industrial categories that may be appropriate for further study or regulation but that do not rank highly when considering TWPE. This could include, for example, categories discharging emerging contaminants, the toxicity of which is still being studied, nutrients, or conventional pollutants.

Table 2. Metrics Used in the OWA Analysis for the 2022 and 2023 Annual Reviews

Metric	Description of Underlying Data	2022 and/or 2023 Annual Review	Data Source[a]
Count of DMR Dischargers	Number of facilities within an industrial category that reported any discharges greater than zero on 2021 DMRs	2022 2023	EPA Water Pollutant Loading Tool
DMR LBY	Estimated annual pollutant load discharged by facilities associated with an industrial category	2022 2023	EPA Water Pollutant Loading Tool
DMR TWPE	Estimated annual pollutant TWPE discharged by facilities associated with an industrial category	2022	EPA Water Pollutant Loading Tool
DMR Mean Flow	Mean annual flow rate across all facilities within an industrial category based on flow rate reported on 2021 DMRs (million gallons per year)	2022 2023	EPA Water Pollutant Loading Tool
Count of TRI Direct Dischargers	Number of facilities within an industrial category that reported estimated releases to surface water on 2021 TRI reports (greater than zero)	2022 2023	EPA Water Pollutant Loading Tool
Count of TRI Indirect Dischargers	Number of facilities within an industrial category that reported estimated releases to a POTW on 2021 TRI reports (greater than zero)	2022 2023	EPA Water Pollutant Loading Tool
TRI Direct LBY	Estimated annual pollutant load reported on 2021 TRI reports by facilities associated with an industrial category (surface water only)	2022 2023	EPA Water Pollutant Loading Tool
TRI Indirect LBY	Estimated annual pollutant load reported on 2021 TRI reports by facilities associated with an industrial category (POTW only)	2022 2023	EPA Water Pollutant Loading Tool
TRI Direct TWPE	Estimated annual pollutant TWPE discharged by facilities associated with an industrial category, as reported on 2021 TRI reports (surface water only)	2022	EPA Water Pollutant Loading Tool
TRI Indirect TWPE	Estimated annual pollutant TWPE discharged by facilities associated with an industrial category, as reported on 2021 TRI reports (POTW only)	2022	EPA Water Pollutant Loading Tool
Flagged for PFAS	An industrial category flagged by the EPA as a potential discharger of PFAS	2022 2023	EPA PFAS Strategic Roadmap
Age of Regulation	Number of years since the regulation was last revised (using 2021 as baseline)	2022 2023	Effluent Guidelines website
EJ Demographic Metric (2-Factor) — Percentage of Category Above 80th Percentile Benchmark	Estimated percentage of facilities within an industrial category that are located in areas that have an EJ index of greater than 80th percentile based on the 2-factor indicator (low income, people of color)	2022 2023	EJScreen

Table 2. Metrics Used in the OWA Analysis for the 2022 and 2023 Annual Reviews

Metric	Description of Underlying Data	2022 and/or 2023 Annual Review	Data Source[a]
EJ Demographic Metric (5-Factor) — Percentage of Category Above 80th Percentile Benchmark	Estimated percentage of facilities within an industrial category that are located in areas that have an EJ index of greater than 80th percentile based on the 5-factor indicator (low income, education less than high school degree, linguistic isolation, unemployment, and life expectancy)	2022 2023	EJScreen

Source: U.S. EPA, 2024a.

Abbreviations: DMR (discharge monitoring report); EJ (environmental justice); LBY (pounds per year); PFAS (per- and poly-fluoroalkyl substances); POTW (publicly owned treatment works); TRI (Toxics Release Inventory); TWPE (toxic-weighted pound equivalent).

a—Data sources include: EPA Water Pollutant Loading Tool, available at https://echo.epa.gov/trends/loading-tool/water-pollution-search; Effluent Guidelines website, available at https://www.epa.gov/eg/industrial-effluent-guidelines; EJScreen, available at https://www.epa.gov/ejscreen; and EPA PFAS Strategic Roadmap, available at https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf.

The EPA used the following data sources for the metrics presented in Table 2: The EPA Water Pollutant Loading Tool, the EPA's PFAS Strategic Roadmap, the Effluent Guidelines website, and EJScreen. The Water Pollutant Loading Tool captures DMR data from the Integrated Compliance Information System (ICIS) database for facilities with a NPDES permit. The tool also captures facility-specific direct and indirect pollutant release estimates to surface water (pounds per year) reported to the TRI. Using facility reported North American Industry Classification System (NAICS) codes and Standard Industrial Classification (SIC) codes, the Water Pollutant Loading Tool relates each facility to point source category (PSC) using two established crosswalks that the EPA developed for the purpose of its annual reviews: SIC/Point Source Category Crosswalk and NAICS/Point Source Category Crosswalk.[20]

The Water Pollutant Loading Tool also applies a pollutant-specific toxic weighting factor to the annual pollutant loads to calculate the relative TWPE for each pollutant and total TWPE for all pollutants discharged at each facility.[21] The Water Pollutant Loading Tool then sums the total annual load and TWPE for the facilities in a particular industrial category to provide a total annual load and TWPE for the industrial category.

With this Preliminary Plan and as described in previous Plans, the EPA continues to evaluate the extent and nature of PFAS discharges and assess opportunities for limiting those discharges from multiple industrial categories, as outlined in the EPA's *PFAS Strategic Roadmap: EPA's Commitments to Action 2021 – 2024* (U.S. EPA, 2021b). The 2022 and 2023 ranking analyses included a metric identifying industrial categories as potentially discharging PFAS based on the 2021 PFAS Strategic Roadmap.

The EPA used data on the year of the ELG promulgation (or revision) to account for the age of regulation (see the EPA's Industrial Effluent Guidelines website for a full list of the industrial categories and the corresponding promulgation date).

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[20] These crosswalks are available with the Water Pollutant Loading Tool documentation. For more information on how the EPA relates each SIC and NAICS code to an industrial category, see Section 5.0 of the *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories* (2009 Screening-Level Analysis (SLA) Report) (U.S. EPA, 2009).

[21] This calculation is consistent with the methodology presented in the 2009 SLA Report (U.S. EPA, 2009). For more information on the toxic weighting factor, see *Toxic Weighting Factors Methodology* (U.S. EPA, 2012).

Additionally, the EPA incorporated two metrics based on socioeconomic demographic data available in EJScreen. EJScreen is the Agency's EJ mapping and screening tool that combines environmental and demographic information. The EPA used EJScreen to estimate the percentage of facilities in an industrial category located in areas with an EJ index greater than the 80th percentile for two EJ indices. The first EJ metric used a two-factor indicator (low income and people of color); and the second EJ metric used a five-factor indicator (low income, education less than high school degree, linguistic isolation, unemployment, and life expectancy).

5.1.2 Rankings for the 2022 and 2023 Annual Reviews

Table 3 presents the results of the 2022 and 2023 annual reviews. As described in Section 5.1.1, the 2023 annual review evaluates the change in industrial category relative rankings when pollutant relative toxicity is not a factor. The 2023 annual review does not include the TWPE loads from DMR and TRI data.

Table 3. 2022 and 2023 Annual Review Ranking Results

40 CFR Part	Industrial Category	2022 Rank	2023 Rank	Recent or Ongoing Rulemaking or Study or Review
433	Metal Finishing	1	1	Ongoing rulemaking
414	Organic Chemicals, Plastics and Synthetic Fibers (OCPSF)[a]	2	2	Ongoing rulemaking
405	Dairy Products Processing	9	3	
419	Petroleum Refining	5	4	Recent study
469	Electrical and Electronic Components	8	5	Recent study
463	Plastics Molding and Forming	11	6	Recent preliminary category review
432	Meat and Poultry Products	6	7	Ongoing rulemaking
423	Steam Electric Power Generating	4	8	Recent rulemaking
415	Inorganic Chemicals Manufacturing	7	9	
436	Mineral Mining and Processing	14	10	
430	Pulp, Paper and Paperboard	3	11	Ongoing preliminary category review
413	Electroplating	15	12	Ongoing rulemaking
420	Iron and Steel Manufacturing	12	13	
410	Textile Mills	16	14	Ongoing study
437	Centralized Waste Treatment	28	15	Recent preliminary category review
428	Rubber Manufacturing	18	16	
406	Grain Mills	13	17	
407	Canned and Preserved Fruits and Vegetables Processing	10	18	
411	Cement Manufacturing	19	19	
446	Paint Formulating	23	20	Recent preliminary category review
418	Fertilizer Manufacturing	20	21	
445	Landfills	21	22	Ongoing rulemaking
471	Nonferrous Metals Forming and Metal Powders	22	23	
422	Phosphate Manufacturing	30	24	

Table 3. 2022 and 2023 Annual Review Ranking Results

40 CFR Part	Industrial Category	2022 Rank	2023 Rank	Recent or Ongoing Rulemaking or Study or Review
408	Canned and Preserved Seafood Processing	41	25	Recent preliminary category review
464	Metal Molding and Casting (Foundries)	29	26	
438	Metal Products and Machinery	24	27	Recent preliminary category review
N/A	Miscellaneous Foods and Beverages	26	28	
429	Timber Products Processing	25	29	
414 [c]	Chlorine and Chlorinated Hydrocarbon Manufacturing (part of OCPSF Category)[a]	17	30	
421	Nonferrous Metals Manufacturing	27	31	
434	Coal Mining	31	32	
439	Pharmaceutical Manufacturing	32	33	
458	Carbon Black Manufacturing	45	34	
417	Soap and Detergent Manufacturing	39	35	Recent preliminary category review
468	Copper Forming	37	36	
426	Glass Manufacturing	38	37	
440	Ore Mining and Dressing	33	38	
425	Leather Tanning and Finishing	35	39	Recent preliminary category review
409	Sugar Processing	42	40	Recent preliminary category review
467	Aluminum Forming	40	41	
455	Pesticide Chemicals	36	42	
454	Gum and Wood Chemicals Manufacturing	44	43	
443	Paving and Roofing Materials (Tars and Asphalt)	46	44	
424	Ferroalloy Manufacturing	43	45	
457	Explosives Manufacturing	48	46	Recent preliminary category review
444	Waste Combustors	49	47	
460	Hospitals	51	48	
461	Battery Manufacturing	47	49	Recent preliminary category review
414 [c]	Cellulose Products Manufacturing (part of OCPSF Category)[a]	34	50	
465	Coil Coating	50	51	
447	Ink Formulating	56	52	
N/A	Unassigned Waste Facility	52	53	
N/A	Drinking Water Treatment	54	54	
442	Transportation Equipment Cleaning	58	55	
451	Concentrated Aquatic Animal Production	57	56	

Table 3. 2022 and 2023 Annual Review Ranking Results

40 CFR Part	Industrial Category	2022 Rank	2023 Rank	Recent or Ongoing Rulemaking or Study or Review
435	Oil & Gas Extraction	55	57	Recent study
449	Airport Deicing	59	58	Ongoing preliminary category review
N/A	Food Service Establishments	62	59	
N/A	Tobacco Products	60	60	
450	Construction and Development	61	61	
N/A	Printing & Publishing	63	62	
466	Porcelain Enameling	64	63	
N/A	Independent and Stand-Alone Labs	66	64	
427	Asbestos Manufacturing	53	65	
N/A	Superfund Sites	65	66	
412	Concentrated Animal Feeding Operations	67	67	Ongoing study
459	Photographic	69	68	
N/A	Industrial Laundries	68	69	
N/A	Photo Processing	70	70	

Note: Industries denoted with N/A under 40 CFR Part are facilities that are grouped together based on similar industrial activity.

a—The EPA evaluated facilities that manufacture chlorine and chlorinated hydrocarbon and facilities that manufacture cellulose products as separate industries from other facilities regulated under the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) ELGs.

As described above, the EPA reviewed all industrial categories as part of its annual review.

The EPA recently promulgated, proposed, or is currently engaged in developing revised regulations for four of the 10 highest ranking industrial categories identified in the 2022 and 2023 annual reviews (see Table 3 in Section 5.1.2). In addition, the EPA has also recently reviewed an additional three high-ranking categories from the 2022 and 2023 annual reviews (i.e., petroleum refining, electrical and electronic components, plastics molding and forming).

The EPA intends to conduct preliminary category reviews of the remaining high-ranking categories (dairy products; canned and preserved fruits and vegetables processing; inorganic chemicals manufacturing; and mineral mining and processing) within the next four years (see Section 5.2.4). Specifically, the EPA is currently conducting a preliminary category review of the dairy products category and expects to publish information regarding that review in Plan 16. The EPA expects to conduct a preliminary category review of the mineral mining and processing category next year in conjunction with preliminary category reviews of other categories associated with metals production. Reviewing all metals-related categories simultaneously maximizes the efficiency of the EPA's reviews because many of these industries use similar processes and treatment technologies. After reviewing the metals-related categories, the EPA expects to conduct a preliminary category review of the canned and preserved fruits and vegetables processing category along with other categories with similar processes, treatment technologies, and age of regulation. The EPA then plans to conduct a preliminary category review of the inorganic chemicals manufacturing category. The EPA plans to review this category simultaneously with the explosives manufacturing category because of the overlap in the types of pollutants between the categories. As discussed in Section 5.2.4, the EPA has developed a schedule for conducting preliminary category reviews of nearly all ELGs over the next several years and is requesting public input on that schedule.

For categories not discussed in detail in Preliminary Plan 16, the EPA is not prioritizing them for further review at this time. These categories did not rank highly in the 2022 or 2023 rankings analysis and the EPA does not otherwise have sufficient information to warrant prioritizing these categories over the categories for which the EPA is currently conducting detailed studies and rulemakings. However, consistent with the iterative nature of its annual review process, the EPA will continue to review all categories while preparing the next Plan. In addition, the EPA intends to strategically conduct preliminary reviews for all industrial categories through 2032 to obtain more information about all categories and is prioritizing reviews of those categories that the EPA has not recently studied or revised. See Section 5.2.4.

The EPA prioritizes its resources to focus on revising those ELGs that will have the most significant environmental benefits and that are the most appropriate for revision because revising an ELG is very time and resource intensive. A typical ELG rulemaking takes several years, 3 full-time employees, and one and a half million dollars per year in contractor support. In addition, rulemakings and associated litigation can span nearly a decade, further occupying the Agency's limited staff and resources. The EPA has limited personnel and financial resources and staggers and prioritizes its work to account for these limitations.

5.2   Preliminary Category Reviews

The EPA conducts preliminary category reviews, which are typically initiated because of the EPA's rankings analyses or input from stakeholders and public comments, to determine if further study or regulatory action may be appropriate. The EPA's preliminary category reviews typically include the following:

- Reviewing general information about the industry (e.g., scope/applicability, corresponding SIC and NAICS codes, process operations that generate wastewater).

- Summarizing current, applicable ELGs (e.g., applicability and subcategories, regulated pollutants, numeric limitations, technology basis).

- Identifying the current industry profile and assessing changes since the ELGs promulgation or last revision (e.g., facilities within scope that generate wastewater, type of discharge (direct or indirect), geographic location, changes in manufacturing operations that may impact wastewater generation).

- Reviewing wastewater characteristics of process wastewater discharges and stormwater discharges, as appropriate.

- Evaluating applicable wastewater treatment technologies or management strategies.

When selecting categories for preliminary review, the EPA considered the 2022 and 2023 annual ranking results, current and recent rulemakings and industrial category reviews, and industries of concern identified by stakeholder input or public comments through previous Plans or direct outreach to the EPA. The EPA initiated the Battery Manufacturing (40 CFR part 461) preliminary category review due to stakeholder input. The EPA initiated the CWT (40 CFR part 437) and Oil and Gas Extraction (40 CFR part 435) preliminary category reviews based on public comments and stakeholder input, and some of these comments pertained to PFAS concerns. The findings for each are presented in the subsections below.

5.2.1   Battery Manufacturing (40 CFR Part 461)

The Battery Manufacturing Category includes the production of modular electric power sources where part, or all, of the fuel is contained within the unit and electric power is generated directly from a chemical reaction. The industry encompasses a variety of battery types, including those used in smartphones, tablets, and electric vehicles (EVs). This industry was selected for a preliminary category review due to concerns that increased battery production and recycling in the United States, as well as the industrywide evolution in how batteries are manufactured, may be resulting in increased wastewater discharges of metals and nutrients.

The Battery Manufacturing ELGs were promulgated in 1984 and revised in 1986. The ELGs apply "to any battery manufacturing plant that discharges or may discharge a pollutant to waters of the United States or that introduces pollutants to a publicly owned treatment works" (40 CFR 461.1). In 1987, the United States had an estimated 255 battery manufacturing facilities. Of these, 22 directly discharged wastewater, 150 indirectly discharged wastewater to a POTW, and 83 did not discharge wastewater (U.S. EPA, 1987). The EPA has found that the battery manufacturing industry has changed since the 1984 ELGs. The results of this category review were:

- The number and types of manufactured batteries have increased and are expected to continue increasing. For example, since the promulgation of the ELGs, there is a decline in the manufacture of single-use batteries resulting from the introduction and use of rechargeable lithium-ion batteries in products like smartphones, tables, and EVs. New battery types (i.e., different from those regulated in the 1980s) are being used in the emerging EVs market (e.g., lithium-ion, nickel-metal hydride) that are not covered in the current Battery Manufacturing ELGs. The EPA identified 131 facilities across 28 states, either existing or planned, involved in manufacturing batteries for EVs (U.S. EPA, 2024b).

- The existing ELGs do not cover wastewater discharges from recycling batteries, a process introduced after the last rule promulgation.

Based on these findings, the EPA is announcing a detailed study on the battery manufacturing category. The goals of this study include:

- Developing an updated profile of the industry, including types of battery manufacturing and recycling currently operating in the United States.

- Characterizing the current pollutant discharges from the industry.

- Understanding and documenting the need (if any) for clarification to implement permit limits for current and new battery manufacturing operations.

- Determining if regulatory revisions are necessary for this industrial category.

For additional information on the battery manufacturing category review, refer to the *2022 Preliminary Category Review of Industrial Source Categories* (U.S. EPA, 2024b).

5.2.2 Centralized Waste Treatment (40 CFR Part 437)

CWT facilities are privately owned wastewater treatment facilities that receive and treat industrial wastewater from other industries for profit. The EPA selected this category for review because of concerns raised in public comments on Preliminary Effluent Guidelines Program Plan 15 (Preliminary Plan 15) that some CWT facilities may be legally receiving wastewater from industrial sources that discharge PFAS (including metal finishers and landfills), however there are no national requirements limiting PFAS discharges from CWT facilities as part of the existing ELGs (U.S. EPA, 2021d).

The EPA promulgated the CWT ELGs in 2000 and amended the regulation in 2003. The CWT ELGs are applicable to wastewater discharges at CWT facilities that receive offsite waste and generate wastewater from CWT operations. The ELGs include the following four subcategories based on the type and concentration of pollutants that may be present in the received wastewater:

- **Subpart A. Metals Treatment and Recovery.** Types of wastes received include electroplating baths and sludges, spent anodizing solutions, metal finishing rinse water and sludges, and chromate and cyanide wastes.

- **Subpart B. Oils Treatment and Recovery.** Types of wastes received include lubricants, used petroleum products, used oils, oil spill clean-up waste, bilge water, tank clean out, off-specification fuels, and underground storage tank remediation waste.

- **Subpart C. Organics Treatment and Recovery.** Types of wastes received include landfill leachate, groundwater clean-up waste, solvent-bearing waste, off-specification organic products, still bottoms, used antifreeze, and wastewater from chemical product operations and paint washes.
- **Subpart D. Multiple Wastestreams.** Subdivided into four segments, for each possible combination of the first three subcategories of wastestreams: 1) combined waste receipts from subparts A, B, and C; 2) combined waste receipts from subparts A and B; 3) combined waste receipts from subparts A and C; and 4) combined waste receipts from subparts B and C.

The EPA reviewed available PFAS monitoring data from Michigan Department of Environment, Great Lakes, and Energy (MI EGLE) collected between 2018 and 2020 for the CWT Category. The data showed that 16 CWT facilities in Michigan sent their wastewater to POTWs and had PFOA and PFOS sample concentrations above the detection limit. The mean concentration for these CWT facilities was 99 nanograms per liter (ng/L) for PFOA and 190 ng/L for PFOS (MI EGLE, 2020 and 2022). Additionally, 2022 DMR and TRI data show total dissolved solids discharges of 118 million pounds per year and nitrate compounds discharges of 866,000 pounds per year from CWT facilities (U.S. EPA, 2022b and 2022c). Based on the presence of PFAS in CWT discharges, the EPA is announcing a detailed study on the CWT industry. The goal of this study is to collect data to better understand the sources of PFAS and other potential pollutants to CWT facilities, the characteristics of the discharges from CWT facilities and the ability to treat for PFAS found in CWT discharges.

For additional information on the review of the CWT industry, refer to the *2022 Preliminary Category Review of Industrial Source Categories* (U.S. EPA, 2024b).

5.2.3 Oil and Gas Extraction (40 CFR Part 435)

Oil and gas extraction is the exploration and production of petroleum and natural gas from wells. The EPA initiated a preliminary category review for the industry because of concerns raised in public comments on Preliminary Plan 15 that PFAS may be in the produced water.

The EPA promulgated the ELGs for the Oil and Gas Extraction Category in 1979 with amendments in 1993, 1996, 2001, and 2016. The Oil and Gas Extraction ELGs cover wastewater discharges from field exploration, drilling, production, well treatment, and well completion activities. Wastewater is generated from the water extracted from geological formations, as well as from chemicals used during exploration, well drilling, and oil and gas production.

Drilling fluids can include surfactants to increase crude oil and natural gas recovery in wells. As stated in reports prepared by the Physicians for Social Responsibility (PSR), companies have reported using nonionic fluorosurfactant chemicals and trade secret chemicals or surfactants, which may be PFAS or PFAS precursors, as well as specific PFAS compounds, including polytetrafluoroethylene (PTFE) (Horwitt et.al., 2022a, 2022b, 2023a, 2023b, and 2023c). However, the EPA reviewed two references that refuted the PSR reports findings noting that PFAS fluids are used in less than 1 percent of hydraulic fracturing sites and were primarily used prior to 2017 (Connor et. Al., 2021; IPAA, 2024). The EPA reviewed industry self-reported data in the national hydraulic fracturing chemical disclosure registry, [FracFocus](#), and found the reported use of PTFE has declined in the industry since its peak in 2014, with only six sites (listed as "jobs" in FracFocus) reporting PTFE use in 2023 (all six of these sites are located in Alaska) (ERG, 2024). However, since there are more than 10,000 reported instances of proprietary chemicals in use by the industry, the EPA cannot determine at this time to what extent PFAS compounds might still be in use in the industry as components of drilling fluids or as part of hydraulic fracturing operations and therefore might be present in discharges from this industry.

Discharge requirements for the major wastes from oil and gas extraction activities, including drilling fluids, drill cuttings, and produced water, vary based on the subcategory and location of the activity. For example, discharges of drilling fluids, drill cuttings, and produced water are allowed from offshore and certain coastal operations. Produced water from onshore wells is typically reused for enhanced oil

recovery or injected into disposal wells. Some produced waters from onshore wells are discharged directly to surface waters under the agricultural and wildlife water use subcategory (40 CFR 435 Subpart E) or indirectly to POTWs. Oil and gas extraction facilities can also send produced water to off-site CWT facilities for direct or indirect discharge. Produced water from onshore wells within the stripper subcategory (Subpart F) are not currently regulated by national categorical discharge standards, and therefore discharges are allowable subject to best professional judgement of the permitting authority and applicable water quality based effluent limitations. The EPA found that, since the last promulgation of revisions to this category in 2016, techniques to extract crude oil and natural gas have not changed substantially. Additionally, states are beginning to ban PFAS in drilling fluids. For example, Colorado has banned the use of PFAS in the oil and gas industry and New Mexico is developing a bill to ban PFAS in drilling fluids in 2024.

Although there have not been recent substantial changes in techniques to extract oil and gas, there has been increased interest in discharging produced water in western states to supplement surface water sources and to alleviate demands on disposal wells. The EPA is therefore announcing a detailed study of wastewater generated from the Oil and Gas Extraction Category to evaluate produced waters that are discharged under the agricultural and wildlife water use subcategory. This may include reviewing available literature on PFAS presence in produced water and discharges to surface water, continuing discussions with state permitting and pretreatment coordinators, and monitoring state trends to permit produced water discharges and ban PFAS in drilling fluids.

For additional information on the review of the oil and gas extraction industry, refer to the *2022 Preliminary Category Review of Industrial Source Categories* (U.S. EPA, 2024b).

5.2.4   *Preliminary Category Review Schedule*

To be more comprehensive and less reliant on reported data evaluated under the annual review process (which may not reflect emerging concerns), the EPA is initiating a schedule to conduct preliminary category reviews of the 44 industrial categories that are not currently being reviewed as part of an ongoing rulemaking or study, or have been recently reviewed through a completed rulemaking, study, or preliminary review. These preliminary category reviews are expected to provide additional information to help the EPA evaluate whether ELGs revisions may be appropriate. The EPA intends to conduct these reviews in addition to the rankings analyses it typically performs as part of its annual reviews (e.g., the OWA in this Plan, loadings analysis in Plan 15). The EPA's intent to conduct these preliminary category reviews demonstrates the Agency's continued commitment to evaluating ELGs from multiple perspectives. This process ensures that the Agency makes informed decisions regarding whether to revise ELGs and how to prioritize the Agency's limited resources. The proposed schedule of preliminary category reviews is presented in Table 4. The EPA developed this proposed schedule based on the year the ELGs were promulgated and last revised (i.e., reviewing older regulations first) and grouping similar industries together (e.g., similar operations, pollutants, and treatment technology) which will maximize the efficiency of the reviews. By grouping similar industries together for review, a newer regulation may be reviewed before older regulations. The EPA is publishing this proposed schedule for transparency and invites public comment on the schedule or information about the industries. This schedule may change over time based on public comments, stakeholder input, annual rankings, resource constraints, or other relevant information.

Table 4. Preliminary Category Review Schedule

Industrial Category	40 CFR Part	Review Year	Year of Promulgation or Last Revision
Dairy Products Processing	405	2024	1974
Grain Mills	406	2024	1974
Soap and Detergent Manufacturing	417	2024	1975

Table 4. Preliminary Category Review Schedule

Industrial Category	40 CFR Part	Review Year	Year of Promulgation or Last Revision
Fertilizer Manufacturing	418	2024	1975
Phosphate Manufacturing	422	2024	1974
Asbestos Manufacturing	427	2024	1975
Coil Coating	465	2024	1983
Coal Mining	434	2025	2002
Mineral Mining and Processing	436	2025	1979
Ore Mining and Dressing (Hard Rock Mining)	440	2025	1988
Metal Molding and Casting (Foundries)	464	2025	1985
Aluminum Forming	467	2025	1988
Copper Forming	468	2025	1986
Nonferrous Metals Forming and Metal Powders	471	2025	1989
Canned and Preserved Fruits and Vegetable Processing	407	2026	1976
Canned and Preserved Seafood (Seafood Processing)	408	2026	1975
Cement Manufacturing	411	2026	1974
Ferroalloy Manufacturing	424	2026	1974
Rubber Manufacturing	428	2026	1974
Carbon Black Manufacturing	458	2026	1978
Inorganic Chemicals Manufacturing	415	2027	1982
Petroleum Refining	419	2027	1982
Paving and Roofing Materials (Tars and Asphalt)	443	2027	1975
Gum and Wood Chemicals Manufacturing	454	2027	1976
Explosives Manufacturing	457	2027	1976
Organic Chemicals, Plastics, and Synthetic Fibers	414	2028	1993
Ink Formulating	447	2028	1975
Pesticides Chemicals	455	2028	1996
Photographic	459	2028	1976
Glass Manufacturing	426	2029	1975
Pharmaceutical Manufacturing	439	2029	2003
Hospitals	460	2029	1976
Sugar Processing	409	2030	1984
Iron and Steel Manufacturing	420	2030	2005
Timber Products Processing	429	2030	1981
Pulp, Paper, and Paperboard	430	2030	2002
Concentrated Aquatic Animal Production (Aquaculture)	451	2030	2004
Nonferrous Metals Manufacturing	421	2031	1990
Transportation Equipment Cleaning	442	2031	2000
Porcelain Enameling	466	2031	1985
Metal Products and Machinery	438	2032	2003
Waste Combustors	444	2032	2000
Airport Deicing	449	2032	2012
Construction and Development	450	2032	2014

5.3 Industrial Wastewater Treatment Technology Reviews

The EPA is continuing its industrial wastewater treatment technology reviews. These reviews are designed to identify and prioritize technologies for further review and application across industrial categories, thus reducing the data and time necessary to identify applicable technologies when developing new and revised ELGs. The EPA has the following goals for the technology reviews:

- Enhance the EPA's ability to identify and prioritize industries for further study based on wastewater treatment technology availability, capabilities, and performance to understand the range of wastewater characteristics that are treatable and to what level they may be treated with a given technology. For example, evaluating a treatment technology for use across multiple industrial categories or identifying which industrial categories might be able to use a technology successfully and which might not.

- Inform industry studies and rulemakings based on changes in wastewater treatment technologies.

- Consolidate wastewater treatment technology background information for future reference and use.

- Collect preliminary data on treatment technology costs.

- Investigate the potential for technology transfer from one industrial category to others.

As part of past Plans, the EPA has published its review of treatment technologies, including, recently suspended growth systems (activated sludge), membrane bioreactors (MBR), moving bed biofilm reactors (MBBR), and treatment based on membranes alone. This information has been used in coordination with additional data review and collection as part of rulemakings and detailed studies (e.g., Meat and Poultry Products, see Section 7.2) to evaluate potentially applicable treatment technologies and screening-level costs. The EPA is currently collecting information on treatment technologies that may be applicable for treating, removing, or destroying PFAS and other emerging contaminants, specifically: ion exchange, granulated activated carbon (GAC), and PFAS destruction technologies. The EPA is evaluating this information as part of the ongoing PFAS rulemakings and studies (see Sections 6.2, 7.3, and 7.4).

5.4 Effluent Guidelines Planning Tools

The EPA has continued to maintain the IWTT Database and ELG Database. These databases, described in more detail below, are used to supplement the EPA's ongoing category reviews by:

- Identifying pollutants with ELGs for specific industrial categories.

- Comparing current discharge concentrations to effluent data in IWTT and long-term average effluent data, effluent limitation data, and technology bases in the ELG Database.

The EPA has used information from these databases in many of the preliminary category reviews and detailed studies it has conducted over the last several years. For example, the EPA considered information from these databases as part of the Multi-Industry PFAS Study and expects to consider the databases in many of the forthcoming preliminary category reviews and detailed studies described in this Plan.

Additionally, the EPA is developing a generic ICR to more efficiently collect data for future preliminary category reviews, detailed studies, and potential rulemakings.

5.4.1 Industrial Wastewater Treatment Technology Database

IWTT is an online, searchable web application that contains wastewater treatment technology performance data from 34 industrial categories and removal performance data for 220 individual pollutant parameters. As part of maintaining the IWTT database and web application, the EPA continually

collects industrial wastewater treatment performance information to populate the database and makes the information available to the public through the IWTT Database website.[22] The EPA has recently identified and added treatment technology performance data for PFAS removal to the IWTT database.

The EPA often uses IWTT in its screening-level analyses and detailed studies to compare current discharges (e.g., from discharge monitoring data available in the Water Pollutant Loading Tool) to recent performance data associated with specific technologies that may be considered applicable to an industry. In addition, the EPA often compares IWTT performance data to limits and corresponding technology bases used during the development of regulations, available in EPA's ELG Database. These analyses help the EPA determine if further study or rulemaking for a specific industry is warranted given advancements in treatment technologies as compared to historical technology bases and current discharges. For example, the EPA considered information from the IWTT database in its recent Multi-Industry PFAS Study.[23]

5.4.2 ELG Database

The EPA compiled information for the 59 different industrial categories[24] with an existing ELG into a consolidated ELG Database. The database enables users to reference and query ELGs, long-term average data, and technology bases as part of ongoing category reviews. In 2021, the EPA made this tool available to the public through the ELG Database website. Users of this tool can search for information within and across ELGs. The database captures information from the CFR[25] as well as from the technical development documents supporting promulgated rules. The ELG Database includes the following information:

- Regulatory level of control promulgated (e.g., BPT, BAT, BCT, NSPS, PSES, PSNS) from an ELG.
- Applicability of the ELGs, including definitions of any regulated subcategories.
- Wastestreams or process operations associated with each ELG.
- Pollutant limitations.
- CFR references to best management practices, monitoring requirements, and narrative limitations.
- ELG history, including promulgation and revision dates.
- Technology bases for the underlying ELG.

The EPA used data in the ELG Database, along with other supporting documents, to identify ELG applicability, levels of control, and the technology basis for the preliminary category reviews. For example, the EPA used data in the ELG Database as part of its recent review of the Battery Manufacturing, Centralized Waste Treatment and Oil and Gas Extraction Categories, and its past review of the Leather Tanning and Finishing, Plastics Molding and Forming, and Paint Formulating Categories (U.S. EPA 2023a). The EPA used this data source to provide a summary of the applicable ELGs, including details of any subcategories, information on facilities to which the ELGs would apply, numeric limitations of pollutants, and available technology bases.

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[22] See https://www.epa.gov/eg/industrial-wastewater-treatment-technology-database-iwtt.

[23] The EPA did not specifically consider IWTT in the preliminary category reviews described in Section 5.2 and decided to conduct detailed studies of those categories based on other information. The EPA expects to consider IWTT and other information regarding treatment technologies during the detailed studies of those categories.

[24] See EPA's Industrial Effluent Guidelines website (https://www.epa.gov/eg/industrial-effluent-guidelines) for a list of the 59 industrial categories.

[25] See the eCFR.gov.

5.4.3 Generic Information Collection Request

The EPA uses a variety of readily and publicly available data sources to complete preliminary category reviews. These data sources include NPDES permits and fact sheets, DMR and TRI data, ELGs rulemaking documentation, literature reviews (readily and publicly available peer reviewed), industry and trade association publicly available reports, other state or federal government reports and databases, public comments and other stakeholder inputs, and economic census data. However, these sources do not contain all of the necessary data to conduct rulemakings, detailed studies, and annual reviews.

Preliminary Plan 16 announces that the EPA is developing a generic ICR to efficiently gather information to address these routine limitations of publicly available data sources in order to conduct more cost effective studies and rulemakings in the future. The EPA intends to seek OMB approval of the generic ICR for the purpose of establishing a standing information collection budget under which the EPA would collect data on facility operations; wastewater generation, treatment, and management; finances; and environmental impacts for a subset of industries to support annual reviews and decisions about future studies and rulemakings as well as regulatory development. An approved standing information collection budget would enable the EPA to collect data and fill industry data gaps more efficiently than under the current industrial category-by-industrial category ICR approval approach. Obtaining this information collection approval would result in a more efficient and effective review and rulemaking processes, while improving the quality of underlying data used to support these activities.

5.4.4 CWA Analytical Methods Development

The EPA CWA Methods Program recently published analytical methods for several new analytes of interest, including Method 1633 for 40 PFAS compounds, Method 1621 for adsorbable organic fluorine, and Draft Method 1634 for 6PPD-quinone. The EPA prioritized development of these methods, in part, due to comments from stakeholders. To better facilitate future stakeholder input on new methods, the EPA is adding a new, voluntary form submission entitled "Request a Method" on the CWA Analytical Methods website . The EPA will use the requests submitted to help inform the selection of future pollutants for which the Agency develops CWA analytical methods.

6. Ongoing Effluent Guidelines Studies

This section summarizes the status of the EPA's ongoing effluent guidelines studies.

6.1 Concentrated Animal Feeding Operations (40 CFR Part 412)

CAFOs are facilities that confine and maintain large numbers of animals for specified periods of time (40 CFR 122.23 defines CAFOs in precise terms). The CAFOs ELGs regulate two parts of CAFOs: the "production area" and the "land application area." The production area is the area that includes the animal confinement area, manure storage areas, raw materials storage area, and waste containment areas (40 CFR 122.23(b)(8)). The land application area is the land under the control of a CAFO owner or operator to which manure, litter, and process wastewater from the production area is or may be applied (40 CFR 122.23(b)(3)).

The existing CAFOs ELGs establish requirements on both the production area and land application area. The ELGs requirements for the production area prohibit the discharge of manure, litter, and process wastewater from the production area to waters of the United States, with only one exception (40 CFR 412.31(a)). Under this exception, the ELGs allow discharges from the production area where those discharges are caused by precipitation and where the production area is designed to contain all manure, litter, and process wastewater from a 25-year, 24-hour rainfall event (40 CFR 412.31(a)(1) defines this exemption in precise terms).[26]

The ELGs requirements for the land application area prohibit discharges unless those dischargers qualify as "agricultural stormwater," which the CWA expressly excludes from regulation (33 U.S.C. 502(14)). The EPA interprets "agricultural stormwater" to include any precipitation-related discharges of manure, litter, and process wastewater from the land application areas if the manure, litter, and process wastewater has been applied to the land application area in accordance with a site-specific "nutrient management plan" that ensures appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater (40 CFR 122.23(c)). A nutrient management plan addresses the form, source, amount, timing, and method of application of nutrients on each field to achieve crop production goals while minimizing the transport of nutrients to surface waters (40 CFR 412.4(c)(1)). The application rates for manure, litter, and process wastewater must be established in accordance with technical standards established by each state (see 40 CFR 123.36; 412.4(c)(2)). The ELGs also require CAFOs to comply with certain recordkeeping and reporting requirements related to both the production area and the land application area (40 CFR 412.4(b), (c)).

Plan 15 (U.S. EPA, 2023a) announced that the EPA was undertaking a detailed study of the CAFOs industrial category, which would collect information to enable the EPA to make an informed, reasoned decision whether to initiate rulemaking to revise the ELGs for CAFOs. The scope of the CAFOs detailed study, like any detailed study of industrial categories, primarily focuses on ELGs and statutory considerations as they pertain to CAFOs. The study therefore includes collecting data regarding discharges from CAFOs and the impacts of those discharges on waters of the United States, and whether those discharges comply with the ELGs. The detailed study also is exploring new technologies and practices for reducing discharges from CAFOs, including those land application areas to which manure, litter, or process wastewater is applied. Other study topics include recent changes to the industry, effects of the industry on EJ communities, and the general financial health of the agriculture industry. The EPA has conducted preliminary work on the study, and has received data from state, environmental, agricultural agencies, and other interested stakeholders regarding CAFOs permitting, state permit programs, nutrient management plans, CAFOs reporting requirements, and documented discharges from

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[26] The ELGs allow CAFOs to request site-specific alternatives to the containment requirements if those alternatives result in discharge amounts that are equal to or less than the containment requirements (40 CFR 412.31(a)(2) defines these alternative requirements in precise terms).

both the production areas and the land application areas. The EPA plans to complete the detailed study by late 2025.

Additionally, in November 2023, the EPA announced the Animal Agriculture and Water Quality (AAWQ) Subcommittee of the Farm, Ranch, and Rural Communities Advisory Committee (FRRCC). The goal of the AAWQ subcommittee is to provide recommendations that will inform the EPA's decisions regarding how to improve the implementation of the CWA NPDES CAFOs permitting program. Recommendations to the EPA may include how to more effectively reduce nutrients and other types of water pollutants from Animal Feeding Operations (AFO), including determining whether any revisions to the regulations are warranted, and whether the EPA can otherwise support the efforts of AFO operators to protect water quality. For more information see https://www.epa.gov/faca/frrcc-0.

6.2 PFAS Industrial Sources and Discharges

As part of its effluent guidelines planning process, the EPA continued collecting and examining readily available public information about PFAS discharges from industrial facilities to surface waters and POTWs. In September 2021, the EPA published the *Multi-Industry PFAS Study – Preliminary 2021 Report,* which discussed information and data the EPA collected on PFAS manufacture, use, control, and discharge from five industrial categories: OCPSF; Metal Finishing; Pulp, Paper, and Paperboard; Textile Mills; and Airports (U.S. EPA, 2021c). In Preliminary Plan 15, also published in September 2021, the EPA announced the following: a rulemaking to revise the ELGs for the OCPSF Category to address PFAS discharges from PFAS manufacturers, a rulemaking to revise the ELGs for the Metal Finishing and Electroplating Categories to address PFAS discharges from chromium finishing operations, detailed studies of PFAS discharges from the Textile Mills and Landfills Categories, and continued monitoring of PFAS use and discharge by the Pulp and Paper Mills and Airports Categories (U.S. EPA, 2021d). In January 2023, the EPA announced in Plan 15 that it was initiating a rulemaking to revise limitations for the Landfills Category to address PFAS discharges in landfill leachate, expand the Textile Mills detailed study to include a mandatory survey to the industry, and initiate a new study to collect data on PFAS discharges to POTWs (U.S. EPA, 2023a).

Since January 2023, the EPA has updated its analyses to reflect recently collected information on PFAS discharges from industrial facilities, and reviewed PFAS discharge data submitted in DMRs between 2020 and 2023. Figure 6-1 presents the change in the number of PFAS sample results and facilities reporting PFAS in DMRs between 2020 and 2023. The quantity of PFAS data reported in DMRs has increased from 2020 to 2023 both in terms of sample results (559 percent increase) and facilities (158 percent increase). The EPA anticipates that the number of PFAS sample results and facilities reporting PFAS in DMRs will continue to increase in coming years as more states and permitting authorities incorporate PFAS monitoring requirements into NPDES permits.[27]

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[27] On December 5, 2022, the EPA released the memorandum titled "Addressing PFAS Discharges in National Pollutant Discharge Elimination System (NPDES) Permits and Through the Pretreatment Program and Monitoring Programs" which recommends that states and permitting authorities use the most current sampling and analysis methods in their NPDES programs to identify known or suspected sources of PFAS.

Figure 1. PFAS Sample Results Reported in DMRs 2020 to 2023
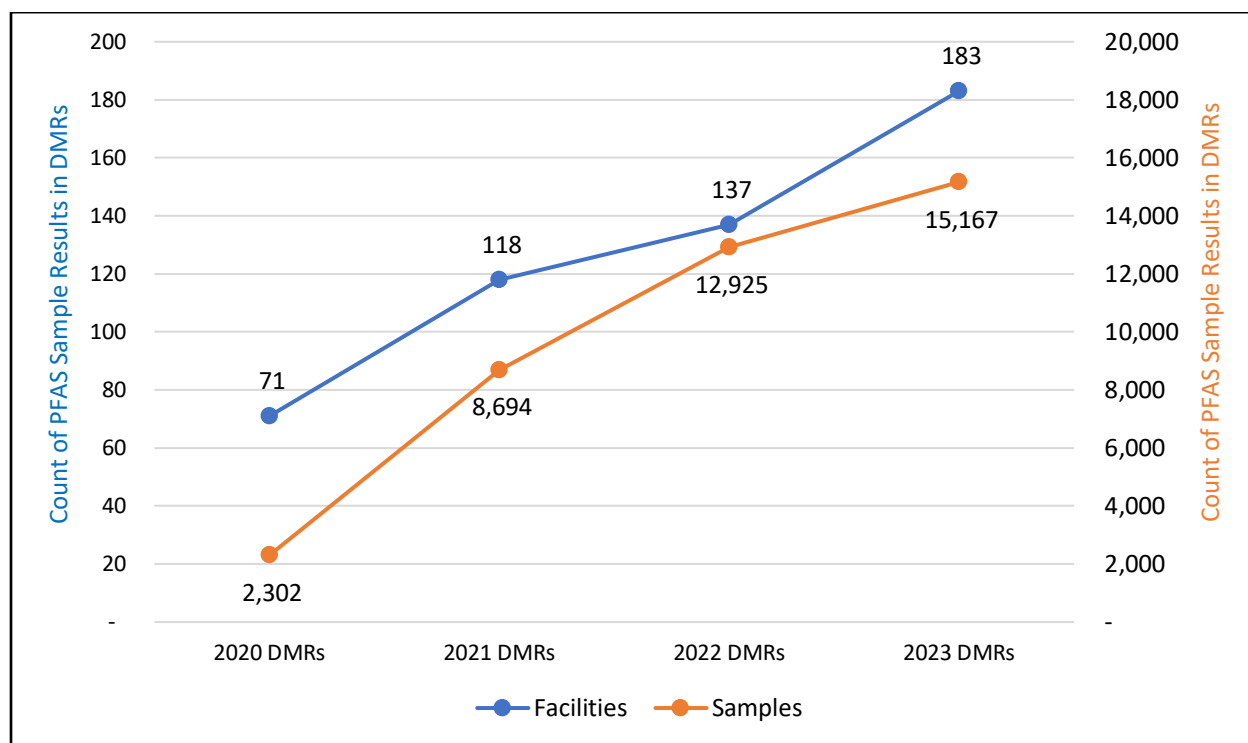
The EPA also reviewed PFAS management and release data reported to the TRI. For reporting year 2022, four additional PFAS analytes were added to the reporting requirements for a total of 180 PFAS tracked by the TRI program. During 2022, 50 facilities reported 1.2 million pounds of PFAS managed as waste, which represents an 8 percent decrease compared to 2021. Of these 50 facilities, 11 facilities reported 161 pounds of PFAS released through water discharges (U.S. EPA, 2024c).

Sections 6.2.1, 6.2.2, and 6.2.3 discuss information and data the EPA has collected and reviewed since January 2023 on PFAS discharge from airports, pulp and paper mills, and textile mills, respectively. Section 6.2.4 discusses the EPA's POTW Influent PFAS study effort to collect and analyze nationwide data on industrial discharges of PFAS to POTWs and PFAS in POTW influent and effluent. Section 6.2.5 discusses the EPA's study of PFAS processors. See Section 7 for additional information on ongoing rulemakings to address PFAS discharges from the OCPSF, Metal Finishing, Electroplating, and Landfills Categories.

6.2.1 Airports

Based on information the EPA collected as part of the Multi-Industry PFAS Study, the EPA documented that aqueous film forming foam (AFFF) has been, and continues to be, used by 14 CFR Part 139 airports in the United States to prevent, extinguish, and control flammable liquid-based fires.[28] Although not all firefighting foams contain PFAS, all historically and currently manufactured AFFF products used by Part 139 airports contain PFAS as an active ingredient. The EPA announced in Plan 15 that it would continue to review airports to further understand the potential for discharge of PFAS-containing wastewater from facilities that use AFFF and to monitor the industry's anticipated phase-out of AFFF.

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[28] Regulation at 14 CFR Part 139 requires the FAA to issue airport operating certifications to airports that: 1) serve scheduled and unscheduled air carrier aircraft with more than 30 seats; 2) serve scheduled air carrier operations in aircraft with more than nine seats but less than 31 seats; or 3) the FAA Administrator requires to have a certificate. Most commercial service airports are 14 CFR Part 139 certified.

While developing Preliminary Plan 16, the EPA collected additional data on AFFF use and wastewater management for Part 139 airports from publicly available information and the Federal Aviation Administration (FAA). The EPA met with FAA in December 2023 to discuss updates related to the use of AFFF at Part 139 airports (U.S. EPA, 2024d). In recent years, the United States Department of Defense (DOD) has taken actions to curb the release of AFFF during nonemergency exercises (i.e., training and testing), replace legacy AFFF that contains long-chain PFAS, and fund development of fluorine-free foam (F3). The FAA has also taken actions to reduce the use of AFFF, including providing recommendations to Part 139 airports on training and testing, as well as working with DOD on development of F3 products.

The 2020 National Defense Authorization Act (NDAA) required the Secretary of the Navy to publish new specifications for PFAS-free firefighting foams by January 2023, the DOD to cease procurement of PFAS-containing products by October 2023, and the DOD to cease use of AFFF at all military installations by October 2024 (with limited exceptions). In January 2023, the DOD fulfilled the first 2020 NDAA requirement by publishing the qualified MILSPEC for an F3 product (MIL-PRF-32725: "Fire Extinguishing Agent, Fluorine-Free Foam (F3) Liquid Concentrate, for Land-Based, Fresh Water Applications"). The DOD released an amended version of MILSPEC MIL-PRF-32725 in August 2023 and certified the first F3 product to meet the MILSPEC in September 2023 (U.S. DOD, 2023; FAA, 2023a). The FAA updated its guidance documents to accept use of F3 extinguishing agents once added to the Navy's Qualified Products' List (QPL), but certified Part 139 airports are not required by the FAA to transition to exclusive use of F3.

In September 2023, the FAA released CertAlert No. 23-07: "Availability of Fluorine Free Foam (F3) on the Navy's Qualified Products List (QPL)" notifying Part 139 airports that an F3 product that meets MILSPEC MIL-PRF-32725 was available on the Navy's QPL (FAA, 2023b). As of March 2024, the QPL includes approved F3 products available from two manufacturers listed under the QLP Number QPL-32725.[29] In Advisory Circular 150/5210-6E: "Aircraft Fire Extinguishing Agents for Airports" (released in November 2023) the FAA allows F3 formulations appearing on the QPL for MILSPEC MIL-PRF 32725 to be used at certified Part 139 airports to meet regulatory requirements (FAA, 2023c). The EPA found that at least three additional F3 products are currently being evaluated for certification with the MILSPEC MIL-PRF-32725.

In May 2023, the FAA released its Aircraft Firefighting Foam Transition Plan (FAA, 2023d). The development of this Plan was directed by Congress in December 2022. Through the transition plan, the FAA committed to providing 1) timelines for implementing approved MILSPEC F3 products and firefighting trainings, 2) information to Part 139 airports on obtaining EPA guidance for reaching acceptable environmental limits, and 3) industry best practices for rinsing vehicles. The FAA also hosted three "Fluorine Free Foam (F3) Transition Awareness" webinars since November 2023 and posted the webinars on their F3 Transition website. Through the webinars, the FAA provided information on F3 performance, key differences between AFFF and F3, and proper application techniques to more than 700 attendees.

As described in Plan 15, the FAA recommended Part 139 airports install input-based testing devices for firefighting equipment that eliminate release of AFFF during mandatory periodic testing of firefighting foam system performance. The FAA also extended a program that provided 100 percent of the funds to purchase these devices. Furthermore, the FAA is no longer requiring airports to use AFFF during timed response. As of March 2024, the EPA determined that 503 of the 517 (97.3%) certified airports have adopted these procedures and have either input-based testing devices or on-board testing equipment, eliminating the release of AFFF except during actual emergency responses (U.S. EPA, 2024d).The FAA, the DOD, and firefighting foam manufacturers continue to collaboratively research applications of F3 alternatives. In May 2024, the FAA released CertAlert No. 24-05: "Department of Defense's Memorandum on Rinsing Aircraft Rescue Firefighting (ARFF) Vehicles Transitioning from Aqueous Film Forming Foam (AFFF) to Fluorine-Free Foam (F3)" (FAA, 2024). DOD guidance on effective and efficient

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[29] A list of F3 products currently certified to meet MILCSPEC MIL-PRF-32725 is available on the Qualified Products Database: https://qpldocs.dla.mil/search/parts.aspx?qpl=4513&param=QPL-32725&type=256

methods for rinsing ARFF vehicles was considered by FAA an acceptable process for certified Part 139 airports.

As of March 2024, the FAA does not plan to require Part 139 airports to eliminate use of AFFFs or exclusively use MILSPEC MIL-PRF-32725 F3. With a limited number (two) of F3 products available for use, airports are understandably slow to transition to the new formulation (MILSPEC MIL-PRF-32725 F3). The FAA has implemented a process to track airports that transition away from AFFF. It is anticipated that DOD facilities, commercial airports, and industrial facilities may at first compete for the limited initial supply of MILSPEC F3 products, but additional products are expected to be added to the QPL and become commercially available. Several AFFF manufacturers have notified the FAA of their intent to halt AFFF production. Additionally, several states have enacted or proposed regulations for PFAS-based AFFF that affect usage at airports. These regulations vary by state, but common regulations include restricting discharge or usage of AFFF for trainings and prohibiting manufacturers from selling or distributing AFFF. The EPA determined that the availability of certified F3 products, elimination of AFFFs from several manufacturer portfolios, state regulations restricting use of AFFFs, and the desire to reduce potential liability associated with PFAS may drive the industry transition from AFFF to F3 over the next few years.

Based on this information, the EPA is not prioritizing a rulemaking on this category at this time. The EPA will continue to review airports to further understand the potential for discharge of PFAS-containing wastewater from facilities that use AFFF and to monitor the industry's transition to F3. The EPA intends to provide updates on these activities in subsequent Effluent Guidelines Plans.

6.2.2 Pulp, Paper, and Paperboard

Based on information the EPA collected as part of the Multi-Industry PFAS Study, the EPA documented that pulp, paper, and paperboard facilities have used PFAS as a coating or additive to provide water, oil, and grease resistance to food contact papers and other specialty paper products. Based on previously collected data as part of Plan 15 for this category, the EPA determined that only a small subset of facilities was actively applying PFAS. The production of paper products containing PFAS at these facilities was less than 0.1 percent of the industry's overall production, and the industry planned to eliminate PFAS use by the end of 2023. Based on information the EPA collected from the American Forest and Paper Associations (AF&PA), a trade association for the pulp and paper industry, the association's 37 member companies ceased PFAS use in the manufacture of food contact materials by the end of 2023. According to a February 2024 announcement by the United States Food and Drug Administration (FDA), grease-proofing materials containing PFAS are no longer being sold in food packing in the United States (FDA, 2024).

As of January 2024, the EPA is aware of only a single AF&PA member facility, owned by Ahlstrom-Munksjö located in Windsor Locks, CT, that is using PFAS. This facility uses FDA-approved PFAS to manufacture medical products to meet performance requirements (U.S. EPA, 2024f). Ahlstrom-Munksjö reported that this mill is aiming for a 40 to 50 percent reduction of PFAS usage by end of 2025 and is compliant with FDA regulatory guidelines and standards. The company informed the EPA that the application of this PFAS is segregated from wastewater streams and is not discharged from the facility (CTDEEP, 2024).[30] The company is continuing to explore alternatives to FDA-approved PFAS in the manufacture of medical products, but no known viable alternatives are currently available that meet the performance requirements for medical products.

Based on this information, the EPA is not prioritizing a rulemaking to revise the effluent guidelines for the Pulp, Paper and Paperboard Category at this time. The EPA will continue to review this category with particular attention to understanding the potential for legacy discharges from these facilities after the industry's transition to PFAS-free additives. The EPA is also conducting other detailed studies such as the

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[30] A final permit has been issued in January 2024 for Ahlstrom Nonwovens LLC facility in Windsor Lock, CT, and contains a compliance schedule that requires the facility to submit a sampling plan to conduct two PFAS sampling events of its discharge.

POTW Influent PFAS study described in Section 6.2.4 to learn more about industrial discharges of PFAS, which includes pulp and paper mills. The EPA intends to provide updates on these activities in subsequent Effluent Guidelines Plans.

6.2.3   Textile Mills (40 CFR Part 410)

As announced in Plan 15, the EPA has continued a detailed study of the Textile Mills Category to gather and evaluate data on the use and treatment of PFAS in this industry and associated PFAS discharges.

As documented in Plan 15, the EPA identified approximately 2,200 textile mills in the United States as the current industry population. The EPA determined that PFAS have been and continue to be used by textile and carpet manufacturers and that PFAS, including legacy long-chain PFAS, are present in wastewater discharges from some textile mills to POTWs. While alternatives to PFAS exist for some textile applications, certain performance standards such as oil repellency can only be achieved by using PFAS, indicating that textile mills will continue to use PFAS to remain competitive with their products. The EPA also expects that textile mills may be discharging PFAS to POTWs or surface waters even when the textile mill no longer uses PFAS in their processes due to the persistence of PFAS in the environment (i.e., legacy PFAS). Most textile mills are not monitoring for PFAS, nor are they required to do so.

In July 2023 and March 2024, the EPA conducted site visits to seven textile mills identified in responses to the Section 308 data request. The purpose of the site visits was to learn about specific textile manufacturing processes, PFAS use in textiles and carpet manufacturing, industry trends in PFAS and water use, available alternatives to PFAS, and wastewater generation and management practices. In addition, the EPA visited a few textile mills that do not use PFAS to learn about current manufacturing processes and wastewater generation. The EPA's site visits include textile mills owned by Milliken & Co., Mohawk Industries, Mount Vernon Mills, Brookwood Finishing, and Tex Tech Industries.

In November 2023, the EPA published a Federal Register Notice (FRN) announcing a plan to submit a new ICR to OMB to obtain approval for an industry-wide questionnaire (EPA ICR No. 2798.01, OMB Control No., 2040-NEW). The EPA received two comments from the public on the ICR, which are available to view in the Textile Mills Detailed Study Docket at www.regulations.gov (Docket Number: EPA-HQ-OW-2023-0287). The EPA addressed those comments in a revised questionnaire and published the second FRN on September 30, 2024.

In addition to soliciting public comments, the EPA conducted outreach to the National Council of Textile Organization (NCTO), a trade association representing textile mills in the United States. NCTO provided feedback on the study, the current state of the textiles industry, and the draft ICR questionnaire.

The EPA intends to use a mandatory questionnaire to develop an updated national profile of textile mills, and assess the industry's PFAS use, wastewater discharges, and wastewater management practices. The EPA will continue the Textile Mills Detailed Study to collect and process responses to the industry questionnaire and evaluate the existing ELGs.

6.2.4   POTW Influent PFAS Study

As announced in Plan 15, the EPA is conducting a POTW Influent PFAS study to collect and analyze nationwide data on industrial discharges of PFAS to POTWs and PFAS in POTW influent and effluent. The EPA intends to administer an OMB approved ICR to require a selected number of POTWs across the United States to complete a questionnaire and collect and analyze wastewater.

The EPA intends to require approximately 400 POTWs with the highest daily flow rates in the United States to complete a mandatory electronic questionnaire. The objectives of the questionnaire are to gather POTW-specific information and data on industrial users discharging to the POTW, known or suspected sources of PFAS discharges to the POTW, and wastewater management practices of the POTW. The EPA plans to use the information and data collected in the questionnaire to select 200 to 300 of the 400 POTWs to participate in a sampling program. The sampling program would require each selected

POTW to collect and analyze one-time grab samples of industrial user effluent, domestic wastewater influent, industrial influent, and POTW effluent for 40 PFAS compounds and adsorbable organic fluorine (AOF) using the EPA's recently completed analytical method, EPA CWA Method 1633 and EPA CWA Method 1621. For each POTW selected, the EPA intends to specify no more than ten industrial users for which the POTW must collect and analyze effluent samples. The total number of industrial users sampled as part of the sampling program is not expected to exceed 2,000 facilities. The EPA intends to conduct the sampling program in several groups to allow for staggered sample collection and laboratory analysis.

The EPA intends to also develop an online data submission portal that would allow states, municipal authorities, and POTWs not selected to participate in the ICR to voluntarily submit existing data characterizing PFAS in industrial user effluent, domestic wastewater, POTW influent, and POTW effluent. The EPA anticipates that this approach would increase the volume of PFAS monitoring data collected and reviewed for the study.

The EPA expects that these information collection activities will illuminate what the predominant industrial point source categories discharging PFAS in wastewater are in the U.S. More specifically, the data should enable the EPA to characterize the type and quantity of PFAS in wastewater discharges from industrial users to POTWs, including industrial categories that the EPA has determined historically or currently use PFAS, but for which insufficient PFAS monitoring data are available, as well as in POTW influent and effluent. The EPA intends to use the wastewater sampling data to identify and prioritize industrial point source categories where additional study or regulations may be warranted to address PFAS discharges through ELGs.

The EPA published notices in the Federal Register and solicited public comments on this proposed ICR on March 26, 2024 and October 10, 2024. All supporting materials for the proposed ICR can be found on www.regulations.gov in Docket Number EPA-HQ-OW-2023-0580.

6.2.5 PFAS Processors

Based on information and data the EPA collected as part of the Multi-Industry PFAS Study, the EPA found that OCPSF facilities receive PFAS feedstocks to produce commercial goods or intermediary products. The EPA considers these facilities to be PFAS processors.

Table 5 shows the range of PFAS concentrations detected in wastewater discharges at six PFAS processors, as reported in the *2021 Multi-Industry PFAS Study Preliminary Report* (U.S. EPA, 2021c).

Table 5. PFAS Concentrations in PFAS Processor Wastewater

Analyte	Quantified Detections/ Total Sample Results	Concentration Range (ng/L)	Average Concentration (ng/L) [a]
PFBA	24/25	ND − 177,000	41,700
PFPeA	24/24	169 − 4,080	829
PFHxA	50/50	2.2 − 519	111
PFHpA	34/62	ND − 112	16.7
PFOA	60/73	ND − 1,600	116
APFO	1/2	ND − 13	6.5
PFNA	26/62	ND − 14,000	883
PFDA	25/50	ND − 88	11.2
PFUnA	26/49	ND − 270	40.1
PFDoA	0/50	ND	ND
PFTrA	2/50	ND − 1.1	0.0404
PFTeA	0/26	ND	ND
PFBS	26/62	ND − 17,600	2,770

Table 5. PFAS Concentrations in PFAS Processor Wastewater

Analyte	Quantified Detections/ Total Sample Results	Concentration Range (ng/L)	Average Concentration (ng/L) [a]
PFHxS	26/62	ND – 466	57
PFOS	49/63	ND – 153	34
PFOSA	0/24	ND	ND

ND – Non-detection; ng/L – nanogram per liter

a – non-detections as 0 in average calculations

Source: EPA Multi-Industry PFAS Study 2021 Preliminary Report (U.S. EPA. 2021c)

The EPA is initiating a detailed study of PFAS processors to develop a more complete understanding of these facilities and their discharges to determine if revisions to the existing ELGs are appropriate.

7. Completed and Ongoing ELGs Rulemakings

This section summarizes the status of the EPA's ongoing ELGs rulemaking efforts.

7.1 Steam Electric Power Generating (40 CFR Part 423)

On May 9, 2024, the EPA finalized a supplemental rulemaking to reduce the discharge of toxic metals and other pollutants from coal-fired power plants. This regulation establishes a zero discharge limitation for three wastewaters generated at coal-fired power plants: flue gas desulfurization (FGD) wastewater, bottom ash (BA) transport water, and combustion residual leachate (CRL).[31] The regulation also establishes non-zero numeric discharge limitations for mercury and arsenic on discharges of CRL that the permitting authority determines are the functional equivalent of a direct discharge to a water of the United States (WOTUS) through groundwater or discharges of CRL that has leached from a waste management unit into the subsurface and mixed with groundwater before being captured and pumped to the surface for discharge directly to a WOTUS, as well as a fourth wastestream, called legacy wastewater, that is typically discharged from certain surface impoundments. The regulation also eliminates less stringent requirements for two subcategories of facilities/electric generating units (high flow facilities and low utilization electric generating units) that were contained in the EPA's 2020 regulation for the steam electric category, while retaining the subcategory from the 2020 rule for electric generating units permanently ceasing combustion of coal by 2028. It also established a new subcategory for electric generating units permanently ceasing combustion of coal by 2034, and a requirement for dischargers to post reporting and recordkeeping documentation to a publicly available website.[32]

7.2 Meat and Poultry Products (40 CFR Part 432)

On January 23, 2024, the EPA proposed a rule to revise the ELGs for the Meat and Poultry Products (MPP) industry. The proposal presents a range of options including more stringent effluent limitations on total nitrogen, new effluent limitations on total phosphorus, updated effluent limitations for other pollutants, new pretreatment standards for indirect dischargers, and revised production thresholds for some of the subcategories in the existing ELGs at 40 CFR part 432. The EPA also proposed potential effluent limitations on chlorides for high chloride wastestreams, establishing effluent limitations for E. coli for direct dischargers, and including pretreatment standard conditional limits for indirect dischargers that discharge to POTWs that have nutrient removal technology. Each option would result in different levels of pollutant reduction and costs. The EPA received public comments on the proposed rule through March 25, 2024, and is currently revising analyses, responding to comments, and working towards taking final action on the rule by August 2025.

The EPA initially promulgated the MPP ELGs in 1974 and amended the regulations in 2004. The current regulation covers wastewater directly discharged by meat and poultry slaughterhouses and further processors as well as independent renderers. The technology basis for existing non-small direct dischargers includes biological treatment with partial denitrification. The current MPP ELGs do not include pretreatment standards for any facilities indirectly discharging process wastewater. In Plan 14 (U.S. EPA, 2021a), the EPA announced a detailed study of the MPP Category. The MPP Category ranked among the top two industrial categories in EPA's cross-industry review of nutrients in industrial wastewater. During the study, the EPA evaluated publicly available data for direct discharging facilities,

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[31] Unmanaged CRL is only subject to mercury and arsenic limitations based on chemical precipitation.

[32] A number of parties have challenged the 2024 rule in various petitions for review across several circuits. The Judicial Panel on Multidistrict Litigation has selected the U.S. Court of Appeals for the Eighth Circuit as the circuit in which to consolidate those petitions for review. *In Re: Environmental Protection Agency, Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Generating Point Source Category, 89 Fed. Reg. 40198, Published on May 9, 2024*, MCP No.187 (8th Cir.).

which make up a small portion of the industry, and data from POTWs. The record indicated that in addition to having high nutrient discharges, indirect discharging MPP facilities may be causing problems for POTWs. In addition, the data showed that some MPP facilities are already removing nutrients and achieving effluent concentrations below the current ELGs requirements. In Preliminary Plan 15, the EPA summarized the detailed study, indicated that a revision to the ELGs may be appropriate, and stated that the EPA would be initiating a rulemaking to revise the MPP ELGs.

7.3   Organic Chemicals, Plastics, and Synthetic Fibers (PFAS Manufacturers) (40 CFR Part 414)

The EPA announced in Preliminary Plan 15 and in the PFAS Strategic Roadmap that the Agency will revise the ELGs for the OCPSF Category (40 CFR part 414) to address wastewater discharges of PFAS from PFAS manufacturing facilities. Based on information and data collected, the EPA determined that PFAS have been, and continue to be, manufactured and used by PFAS manufacturing facilities in the United States.

In December 2021, the EPA administered a data request under Section 308 of the CWA to obtain information and data from the industry that provided a robust data set characterizing wastewater generation, treatment, and discharge from PFAS manufacturing facilities. In addition, the EPA has conducted virtual site visits of facilities that manufacture PFAS and treat the process wastewater with advanced wastewater treatment technologies.

In 2022, the EPA sampled wastewater at facilities selected using the information collected in site visits and responses to the Section 308 questionnaire. The purpose of the sampling was to characterize pollutants in raw wastewaters prior to treatment, as well as to document wastewater treatment performance.

In 2023, the EPA conducted a 5-day sampling event at a facility operating wastewater treatment consistent with the treatment technology configuration considered for the BAT basis of the proposed rule. The purpose of the sampling was to characterize the treatment performance and evaluate data for effluent limitations development.

The EPA intends to publish a proposed rule by fall 2024 for PFAS manufacturers under the OCPSF Category.

7.4   Metal Finishing (40 CFR Part 433) and Electroplating (40 CFR Part 413)

The EPA announced in Preliminary Plan 15 and in the PFAS Strategic Roadmap that the Agency will revise the ELGs for the Metal Finishing and Electroplating Categories (40 CFR part 433 and part 413, respectively) to address wastewater discharges of PFAS. Based on information and data collected to date, the EPA determined some metal finishing and electroplating facilities use PFAS-based chemical fume suppressants to control hexavalent chromium emissions or PFAS-containing wetting agents in their operations. The EPA determined facilities conducting certain operations that use or may have used hexavalent chromium, including chromium electroplating, chromium anodizing, chromate conversion coating, and chromic acid etching (referred to as chromium finishing facilities), are the most significant source of PFAS in the Metal Finishing and Electroplating Categories. Existing data demonstrate that these facilities have concentrations of PFOS and 6:2 fluorotelomer sulfonic acid (6:2 FTSA) in their effluent that is, on average, several orders of magnitude higher than metal finishing and electroplating facilities that do not conduct chromium finishing.

In December 2023, the EPA administered a mandatory electronic questionnaire to more than 2,000 facilities the EPA identified as likely conducting chromium finishing. The questionnaire collected data on chromium finishing operations conducted, use of chemical fume suppressants and wetting agents, wastewater generation and management, financial information, and other technical data necessary to complete rulemaking analyses. The EPA received over 1,200 completed questionnaires by May 2024 and will use response data to estimate compliance costs, pollutant removals, non-water quality

environmental impacts, and environmental and economic impacts of potential pollution control technologies.

The EPA has learned that: (1) it is possible to successfully mitigate hexavalent chromium emissions using commercially available chemical fume suppressants that do not contain any PFAS; (2) many facilities could switch their operations to using trivalent chromium, which does not require the use of chemical fume suppressants; (3) a number of facilities are successfully using granular activated carbon to treat PFOS in wastewater to meet water quality limitations and granular activated carbon may be effective for other PFAS in metal finishing and electroplating wastewater; and (4) other technologies exist or are in development that may be able to treat PFAS in wastewater from chromium finishing facilities, including membranes, ion exchange, and PFAS destruction techniques.

In the coming year, the EPA intends to conduct a wastewater sampling program to collect the data necessary to characterize the type and quantity of PFAS in chromium finishing wastewater and determine the performance of technologies considered for the technology basis of the proposed rule. The EPA intends to publish a proposed rule by the spring 2026.

7.5 Landfills (40 CFR Part 445)

The EPA announced in Plan 15 the Agency's intention to revise the ELGs for the Landfills Point Source Category (40 CFR part 445) to address PFAS discharges from this industrial category. In Plan 15, the EPA presented the results of its preliminary category review, including its evaluation of PFAS analytical data for landfill leachate. The EPA evaluated discharge data from over 200 landfills from across the country and found PFAS present in the leachate at over 95 percent of the landfills.

The EPA intends to collect the data necessary to revise this ELG, which may include data collection from the industry and analysis of wastewater samples. The EPA plans to propose revised ELGs in 2027.

8. References for Preliminary Plan 16

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