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Environmental Protection
Agency

The 2013 Annual Effluent Guidelines Review Report

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1200 Pennsylvania Avenue, NW
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PART I: INTRODUCTION

1. 2013 ANNUAL REVIEW EXECUTIVE SUMMARY

Effluent limitations guidelines and standards (ELGs) are an essential element of the nation's clean water program, which was established by the 1972 Clean Water Act (CWA). ELGs are technology-based regulations used to control industrial wastewater discharges. EPA issues ELGs for new and existing point source categories that discharge directly to surface waters, as well as those that discharge to publicly owned treatment works (POTWs). These ELGs are applied in permits to limit the pollutants that facilities may discharge. To date, EPA has established ELGs to regulate wastewater discharges from 58 point source categories. This regulatory program substantially reduces industrial water pollution and continues to be a critical aspect of the effort to clean the nation's waters.

In addition to developing new ELGs, the CWA requires EPA to revise existing ELGs when appropriate. Over the years, EPA has revised ELGs in response to developments such as advances in treatment technology and changes in industry processes. To continue its efforts to reduce industrial wastewater pollution and fulfill CWA requirements, EPA has established an annual review and effluent guidelines planning process with three main objectives: (1) review existing ELGs to identify candidates for revision, (2) identify new categories of direct dischargers for possible development of effluent guidelines, and (3) identify new categories of indirect dischargers for possible development of pretreatment standards. To achieve these objectives, EPA conducts a two-step review. First, EPA screens industrial discharges based on the relative hazard they pose to human health and the environment. Then, for those categories identified as a hazard priority, EPA conducts a more detailed evaluation to determine if the category is a candidate for new or revised ELGs.

For the 2013 Annual Review, EPA conducted a toxicity rankings analysis (TRA) of all industrial categories, including those subject to existing ELGs and those not currently regulated by ELGs, to prioritize for further review those whose pollutant discharges may pose the greatest hazards to human health or the environment because of their toxicity. To identify these industrial categories, EPA calculated the industrial categories cumulative percent of the total toxic-weighted pound equivalents (TWPE) discharged. As shown in Table 1-1, EPA identified and focused its review on the 17 industrial categories that collectively discharge over 95 percent of the total TWPE.

Table 1-1. Point Source Categories Collectively Discharging Over 95% of the Total 2013 Combined TWPE

40 CFR Part	Point Source Category	Total TWPE	Cumulative Percentage of Total TWPE	Rank
414	Organic Chemicals, Plastics, and Synthetic Fibers	1,690,000	13.1%	1
430	Pulp, Paper, and Paperboard	1,690,000	26.3%	2
419	Petroleum Refining	1,430,000	37.4%	3
NA	Drinking Water Treatment	1,390,000	48.2%	4
440	Ore Mining and Dressing	1,340,000	58.6%	5
420	Iron and Steel Manufacturing	1,250,000	68.4%	6
418	Fertilizer Manufacturing	606,000	73.1%	7
415	Inorganic Chemicals Manufacturing	469,000	76.7%	8

Table 1-1. Point Source Categories Collectively Discharging Over 95% of the Total 2013 Combined TWPE

40 CFR Part	Point Source Category	Total TWPE	Cumulative Percentage of Total TWPE	Rank
421	Nonferrous Metals Manufacturing	426,000	80%	9
455	Pesticide Chemicals	393,000	83.1%	10
409	Sugar Processing	374,000	86%	11
433	Metal Finishing	317,000	88.5%	12
451	Concentrated Aquatic Animal Production	292,000	90.7%	13
434	Coal Mining	189,000	92.2%	14
432	Meat and Poultry Products	158,000	93.4%	15
429	Timber Products Processing	131,000	94.5%	16
435	Oil and Gas Extraction	106,000	95.3%	17
Total 2013 Point Source Category Rankings		**12,900,000**		

Based on the annual review process, data sources, and historical data changes, EPA determined that seven of the 17 categories did not warrant a detailed preliminary category review as part of the 2013 Annual Review. For these seven categories, many of which have been reviewed in detail in prior annual reviews, EPA found that the majority of the TWPE for these categories resulted from an easily identifiable error (e.g., incorrect reporting units) associated with one or two facilities. For TWPE not associated with data entry errors, EPA did not identify any new information to alter the findings made during previous annual reviews (see Section 5.1 for more information). These industrial categories include:

- Concentrated Aquatic Animal Production (40 CFR Part 451);
- Meat and Poultry Products (40 CFR Part 432);
- Oil and Gas Extraction (40 CFR Part 435);
- Ore Mining and Dressing (40 CFR Part 440);
- Pesticide Chemicals (40 CFR Part 455);
- Fertilizer Manufacturing (40 CFR Part 418); and
- Sugar Processing (40 CFR Part 409).

For the remaining 10 of the 17 industrial categories that collectively discharge over 95 percent of the total TWPE, EPA did not initially identify obvious data entry errors and/or determined that the TWPE was attributed to multiple pollutants and facilities. Therefore, EPA completed detailed preliminary category reviews for the following categories (see Sections 5.2 through 5.11 for more information):

- Coal Mining (40 CFR Part 434);
- Drinking Water Treatment (potential new category);
- Inorganic Chemicals Manufacturing (40 CFR Part 415);
- Iron and Steel Manufacturing (40 CFR Part 420);
- Metal Finishing (40 CFR Part 433);

- Nonferrous Metals Manufacturing (40 CFR Part 421);
- Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR Part 414);
- Petroleum Refining (40 CFR Part 419);
- Pulp, Paper, and Paperboard (40 CFR Part 430); and
- Timber Products Processing (40 CFR Part 429).

From the 10 detailed preliminary category reviews, EPA identified two for which further review and study is appropriate: Metal Finishing (40 CFR Part 433) and Petroleum Refining (40 CFR Part 419).

- **Metal Finishing (40 CFR Part 433).** During the 2012 Annual Review, EPA's review of the Targeted National Sewage Sludge Survey, combined with available indirect discharge data from TRI identified the Metal Finishing Point Source Category as potentially discharging high concentrations of metals, particularly chromium, nickel, and zinc, to POTWs. Additionally, this category ranked high, in terms of TWPE in the 2013 TRA.
- **Petroleum Refining (40 CFR Part 419).** During the 2011 Annual Review, EPA selected the Petroleum Refining Category (40 CFR Part 419) for a preliminary category review because it ranked high, in terms of TWPE (U.S. EPA, 2012). At that time, EPA found that the TWPE was largely due to Toxics Release Inventory reported discharges of dioxin and dioxin-like compounds, polycyclic aromatic compounds, and discharge monitoring report–reported discharges of sulfides, chlorine, and metals. EPA continued to review this category during the 2012 Annual Review to verify facilities' discharges and confirmed the 2011 Annual Review results (U.S. EPA, 2014a). EPA also reviewed new air pollution control regulations to identify whether the regulations could result in new wastewater streams. Additionally, this category ranked high, in terms of TWPE in the 2013 TRA.

For the remaining eight detailed preliminary category reviews, EPA determined that further category review was not warranted at this time for one, or more, of the following reasons:

- High category TWPE was a result of data entry errors at one or more facilities. After correcting these reporting errors, the category TWPE was significantly reduced and the category was removed from the top 95 percent of the toxicity rankings.
- High category TWPE was from one or two facilities that do not represent the category discharges as a whole and may be most appropriately controlled by facility-specific permitting action.
- High category TWPE was a result of discharges that are below facility-specific permit limitations or available treatment technology concentrations.

This report details EPA's methodology for its 2013 Annual Review and supports EPA Office of Water's *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans* (U.S.

EPA, 2014b). The Plans, pursuant to Section 304(m) of the Clean Water Act (CWA),[1] discuss the findings of the 2011, 2012, and 2013 Annual Reviews and detail EPA's proposed actions and follow-up. The Plans also identify any new or existing industrial categories selected for effluent guidelines rulemaking and provide a schedule for such rulemaking.

1.1 References for 2013 Annual Review Executive Summary

1. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report.* Washington, D.C. (December). EPA-821-R-12-001. EPA-HQ-OW-2010-0824-0195.

2. U.S. EPA. 2014a. *The 2012 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-004. EPA-HQ-OW-2010-0824. DCN 07933.

3. U.S. EPA. 2014b. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans*. Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170. DCN 07756.

[1] Available at: http://water.epa.gov/lawsregs/lawsguidance/cwa/304m/.

2. BACKGROUND

This section explains how the Effluent Guidelines Program fits into EPA's National Water Program, describes the general and legal background of the Effluent Guidelines Program, and summarizes EPA's process for making effluent guidelines revision and development decisions (i.e., effluent guidelines planning), including details of its annual review process.

2.1 The Clean Water Act and the Effluent Guidelines Program

The Clean Water Act (CWA) is based on the principle of cooperative federalism, with distinct roles for both EPA and the states, in which the goal is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To that end, the act is generally focused on two types of controls: (1) water-quality-based controls, based on water quality standards, and (2) technology-based controls, based on effluent limitations guidelines and standards (ELGs).

The CWA gives to the states primary responsibility for establishing, reviewing, and revising water quality standards. Water quality standards consist of the following elements: (1) designating uses for each water body (e.g., fishing, swimming, supporting aquatic life), (2) establishing criteria that protect the designated uses (numeric pollutant concentration limits and narrative criteria, e.g., "no objectionable sediment deposits"), and (3) developing an anti-degradation policy. EPA develops recommended national criteria for many pollutants, pursuant to CWA section 304(a), which the states may adopt or modify as appropriate to reflect local conditions.

EPA is responsible for developing technology-based ELGs, based on currently available technologies for controlling industrial wastewater discharges. Permitting authorities (states authorized to administer the National Pollutant Discharge Elimination System (NPDES) permit program, and EPA in the few states that are not authorized) then must incorporate these guidelines and standards into discharge permits as technology-based effluent limitations, where applicable (U.S. EPA, 2010).

While technology-based effluent limitations in discharge permits are sometimes as stringent as, or more stringent, than necessary to meet water quality standards, the effluent guidelines program is not specifically designed to ensure that the discharges from each facility meet the water quality standards of its receiving water body. For this reason, the CWA also requires authorized states to establish water-quality-based effluent limitations, where necessary to meet water quality standards. Water-quality-based limits may require industrial facilities to meet requirements that are more stringent than those in a national effluent guideline regulation. In the overall context of the CWA, effluent guidelines must be viewed as one tool in the broader set of tools and authorities Congress provided to EPA and the states to restore and maintain the quality of the nation's waters.

The 1972 CWA directed EPA to promulgate effluent guidelines that reflect pollutant reductions that can be achieved by categories or subcategories of industrial point sources through the implementation of available treatment and prevention technologies. The effluent guidelines are based on specific technologies (including process changes) that EPA identifies as meeting the statutorily prescribed level of control (see CWA sections 301(b)(2), 304(b), 306, 307(b), and

307(c)). See Appendix A of this report for more information on the CWA and an explanation of the different levels of control for ELGs.

Unlike other CWA tools, effluent guidelines are national in scope and establish pollution-control obligations for all facilities within an industrial category or subcategory that discharge wastewater. In establishing these controls, under the direction of the statute, EPA assesses, for example, (1) the performance and availability of the best pollution-control technologies or pollution-prevention practices for an industrial category or subcategory as a whole; (2) the economic achievability of those technologies, which can include consideration of the affordability of achieving the reduction in pollutant discharge; (3) the cost of achieving effluent reductions; (4) non-water-quality environmental impacts (including energy requirements); and (5) such other factors as the EPA Administrator deems appropriate.

Congress saw creating a single national pollution-control requirement for each industrial category, based on the best technology the industry can afford, as a way to reduce the potential creation of "pollution havens" and to set the nation's sight on eliminating the discharge of pollutants to waters of the US. Consequently, EPA's goal in establishing national effluent guidelines is to ensure that industrial facilities with similar characteristics, regardless of their location or the nature of their receiving water, will at a minimum meet similar effluent limitations, representing the performance of the best pollution control technologies or pollution prevention practices.

In addition to establishing technology-based effluent limits, effluent guidelines provide the opportunity to promote pollution prevention and water conservation. This may be particularly important in controlling persistent, bioaccumulative, and toxic pollutants discharged in concentrations below analytic detection levels. ELGs also control pollutant discharges from industrial facilities and cover discharges directly to surface water (direct discharges) and discharges to publicly owned treatment works (POTWs) (indirect discharges).

2.2 Effluent Guidelines Review and Planning Process

In addition to establishing new regulations, the CWA requires EPA to review existing effluent guidelines annually. EPA reviews all point source categories subject to existing effluent guidelines and pretreatment standards to identify potential candidates for revision, consistent with CWA sections 304(b), 301(d), and 304(g). EPA also reviews industries consisting of direct-discharging facilities not currently subject to effluent guidelines to identify potential candidates for effluent guidelines rulemakings, pursuant to CWA section 304(m)(1)(B). Finally, EPA reviews industries consisting entirely or almost entirely of indirect-discharging facilities that are not currently subject to pretreatment standards, to identify potential candidates for pretreatment standards development under CWA section 307(b).

2.2.1 Effluent Guidelines Review and Prioritization Factors

In its annual reviews, EPA considers four major factors for prioritizing existing effluent guidelines or pretreatment standards for possible revision, or identifying new industries of concern through alternate analyses. These factors were developed in EPA's draft National Strategy, described at http://water.epa.gov/scitech/wastetech/guide/strategy/fs.cfm.

The first factor EPA considers is the amount and type of pollutants in an industrial category's discharge and the relative hazard posed by that discharge. This enables the Agency to set priorities for its rulemaking that will achieve significant environmental and health benefits.

The second factor EPA considers is the performance and cost of applicable and demonstrated wastewater treatment technologies, process changes, or pollution prevention alternatives that could effectively reduce the concentrations of pollutants in the industrial category's wastewater and consequently, reduce the hazard to human health or the environment associated with these pollutant discharges.

The third factor EPA considers is the affordability or economic achievability of the wastewater treatment technology, process change, or pollution prevention measures identified using the second factor. If the financial condition of the industry indicates that it would not be affordable to implement expensive and stringent new requirements, EPA might conclude a less stringent, less expensive approach to reduce pollutant loadings would better satisfy applicable statutory requirements.

The fourth factor EPA considers is the opportunity to eliminate inefficiencies or impediments to pollution prevention or technological innovation, or opportunities to promote innovative approaches such as water-quality trading, including within-plant trading. This factor might also prompt EPA, during annual reviews, to decide against revising an existing set of effluent guidelines or pretreatment standards where the pollutant source is already efficiently and effectively controlled by other regulatory or non-regulatory programs.

2.2.2 Annual Review Process

EPA has instituted a two-step annual review process. In the odd-year reviews, EPA screens industrial dischargers through a toxicity ranking analysis (TRA) that identifies and ranks those categories whose pollutant discharges pose a substantial hazard to human health and the environment (the first draft National Strategy factor). For the TRA, EPA relies on discharge monitoring report (DMR) and Toxics Release Inventory (TRI) data to rank and prioritize for review industrial discharge categories based on toxic-weighted pound equivalents (TWPE) released. EPA relies on facility and state contacts, permits, and publicly available data sources to review top ranking industrial categories (see Section 2.2.2.1 for an overview of the odd-year annual review and Part II of this report for the specific methodology EPA used for the 2013 TRA).

In the even years, EPA reviews additional hazard data sources and conducts alternate analyses to enhance the identification of industrial categories for which new or revised ELGs may be appropriate, beyond those that traditionally rank high in the TRA. This is consistent with the Government Accountability Office's (GAO's) recommendation that EPA's annual review approach include additional industrial hazard data sources to augment its screening-level review of discharges from industrial categories.[2] Furthermore, EPA recognizes the need to consider in the screening phase the availability of treatment technologies, process changes, or pollution-

[2] GAO published its recommendations for the review of additional hazard data sources in its September 2012 report *Water Pollution: EPA Has Improved Its Review of Effluent Guidelines But Could Benefit from More Information on Treatment Technologies*, available online at: http://www.gao.gov/assets/650/647992.pdf.

prevention practices that can reduce the identified hazards (the second and fourth draft National Strategy factors). See Section 2.2.2.2 for an overview of the even-year annual review.

Using the TRA in the odd-year review in conjunction with additional analyses and hazard data in the even-year review, EPA is considering more cohesively and comprehensively the factors laid out in its draft National Strategy. This approach allows the Agency to prioritize existing effluent guidelines or pretreatment standards for possible revision or identify new industries of concern through alternate analyses.

EPA also conducts a more detailed preliminary category review of those industrial discharge categories that rank highest in terms of TWPE (i.e., pose the greatest hazard to human health and the environment) in the TRA or are identified as warranting further review during the even-year analyses. If EPA determines that further review is warranted for an industrial category, EPA may complete a preliminary or detailed study of the point source category (see Section 2.2.2.4), which may eventually lead to a new or revised guideline.

2.2.2.1 Overview of the Toxicity Ranking Analysis and Odd-Year Annual Reviews

In the odd-year annual reviews, EPA conducts a TRA using data from the TRI and data from DMRs contained in the Permit Compliance System (PCS) and the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES). Figure 2-1 details how EPA uses the TRA to identify existing ELGs that may warrant revision; Figure 2-2 addresses how EPA identifies new categories that may warrant regulation.

TRI and DMR data do not identify the effluent guideline(s) applicable to a particular facility. However, TRI includes information on a facility's North American Industry Classification System (NAICS) code, while DMR data include information on a facility's Standard Industrial Classification (SIC) code. Thus, the *first step* in EPA's TRA is to relate each SIC and NAICS code to an industrial category.[3] The *second step* is to use the information reported in TRI and DMR for a specific year to calculate the pounds of pollutant discharged to U.S. waters. These calculations are performed for toxic, nonconventional, and conventional pollutants. For indirect dischargers, EPA adjusts the facility discharges to account for removals at the POTW. The *third step* is to apply toxic weighting factors (TWFs)[4] to the annual pollutant discharges to calculate the total discharge of toxic pollutants as TWPE for each facility. *EPA then* sums the TWPE for each facility in a category to calculate a total TWPE per category for that year. EPA calculates two TWPE estimates for each category: one estimate based on data in TRI and one estimate based on DMR data. EPA combines these two estimates to generate a single TWPE value for each industrial category. EPA takes this approach because it found that

[3] For more information on how EPA related each SIC and NAICS code to an industrial category, see Section 5.0 of the *2009 Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories* (U.S. EPA, 2009).
[4] For more information on TWFs, see *Toxic Weighting Factor Development in Support of CWA 304(m) Planning Process* (U.S. EPA, 2006).

combining the TWPE estimates from TRI and DMR data into a single TWPE number offered a clearer perspective of the industries with the most toxic pollution.[5]

EPA then ranks point source categories according to their total TWPE discharges. To identify categories for further review, EPA prioritizes categories accounting for 95 percent of the cumulative TWPE from the combined DMR and TRI data. As illustrated in Figure 2-1, EPA typically excludes from further review categories for which an effluent guidelines rulemaking is currently underway or for which effluent guidelines have been promulgated or revised within the past seven years.[6] EPA also excludes categories in which only a few facilities account for a large majority of toxic-weighted pollutant discharges. EPA generally does not prioritize such a category for additional review, but suggests that individual permits may be more effective in addressing the toxic-weighted pollutant discharges than a national effluent guidelines rulemaking. For more information on the results of the 2013 Annual Review, see Section 6.

As illustrated in Figure 2-2, EPA may also evaluate discharges in the odd-year TRA that are associated with SIC or NAICS codes that are not currently regulated or that may be a potential new subcategory of an existing ELG. EPA evaluates these discharges to determine if new ELGs are warranted for the new industrial category (or subcategory). Similarly, EPA can supplement this information with findings from new analyses conducted in the even-year annual review and review of treatment technology performance data to identify new industrial categories that may warrant ELGs (see Section 2.2.2.2).

2.2.2.2 Overview of Even-Year Annual Reviews

In the even-year annual reviews, EPA identifies additional hazard data and reviews treatment technologies to augment the TRA completed in each odd-year review. EPA prioritizes the review of these additional hazard data sources based on (1) the likelihood of identifying unregulated industrial discharges, (2) the utility of identifying new wastewater treatment technologies or pollution prevention alternatives, and (3) representativeness of the data for an industrial category. These new analyses take into account a broader set of hazard data and advancements in treatment technologies. In addition to the new hazard data sources, the even-year reviews will include information from the public comments received on the Preliminary Plan and any continuing preliminary category reviews identified during the odd-year review, as illustrated in Figure 2-3. The specific methodologies and analyses of the 2012 Annual Review are described in more detail in Section 3 of the EPA's *Final 2012 Effluent Guidelines Program Plan and Preliminary 2014 Effluent Guidelines Program Plan* (U.S. EPA, 2014).

2.2.2.3 Preliminary Category Reviews

For the industrial categories with the highest hazard potential identified in the TRA, or identified as a priority from any of the even-year review analyses, EPA may conduct a

[5] Different pollutants may dominate the TRI and DMR TWPE estimates for an industrial category due to the differences in pollutant reporting requirements between the TRI and DMR databases. The single TWPE number for each category highlights those industries with the most toxic discharge data in both TRI and DMR. Although this approach could theoretically lead to double-counting, EPA's review of the data indicates that, because the two databases typically focus on different pollutants, double-counting is minimal and does not affect the order of the top-ranked industrial categories.

[6] EPA chose seven years because this is the typical length of time for the effects of effluent guidelines or pretreatment standards to be fully reflected in pollutant loading data and TRI reports.

preliminary category review, particularly if it lacks sufficient data to determine whether regulatory action would be appropriate. EPA will complete preliminary category reviews as part of the odd- or even-year review cycle depending on the industrial categories warranting further review at that time. In its preliminary category reviews EPA typically examines the following: (1) wastewater characteristics and pollutant sources, (2) the pollutants driving the toxic-weighted pollutant discharges, (3) availability of pollution prevention and treatment, (4) the geographic distribution of facilities in the industry, (5) any pollutant discharge trends within the industry, and (6) any relevant economic factors. In executing preliminary category reviews, EPA first attempts to verify the toxicity ranking results and fill in data gaps. These assessments provide an additional level of quality assurance on the reported pollutant discharges and number of facilities that represent the majority of toxic-weighted pollutant discharge. After the ranking results are verified, EPA next considers costs and performance of applicable and demonstrated technologies, process changes, or pollution-prevention alternatives that can effectively reduce the pollutants in the point source category's wastewater. Finally, and if appropriate based on the other findings, EPA considers the affordability or economic achievability of the technology, process change, or pollution prevention measure identified using the second factor.

During a preliminary category review, EPA may consult data sources including, but not limited to: (1) the U.S. Economic Census, (2) TRI and DMR data, (3) trade associations and reporting facilities that can verify reported releases and facility categorization, (4) regulatory authorities (states and EPA regions) that can clarify how category facilities are permitted, (5) NPDES permits and their supporting fact sheets, (6) EPA effluent guidelines technical development documents, (7) relevant EPA preliminary data summaries or study reports, and (8) technical literature on pollutant sources and control technologies.

2.2.2.4 Preliminary and Detailed Studies

After conducting the preliminary category reviews, as shown in Figure 2-4, EPA may next conduct either a preliminary or detailed study of an industrial category. Typically these studies profile an industry category, gather information about the hazards posed in its wastewater discharges, gather information about availability and cost of treatment and pollution prevention technologies, assess economic achievability, and investigate other factors in order to determine if it would be appropriate to identify the category for possible effluent guidelines revision. During preliminary or detailed studies, EPA typically examines the factors and data sources listed above for preliminary category reviews. However, during a detailed study, EPA's examination of a point source category and available pollution prevention and treatment options is generally more rigorous than the analyses conducted during a preliminary category review or a preliminary study and may, if appropriate, include primary data collection activities (such as industry questionnaires and wastewater sampling and analysis) to fill data gaps.

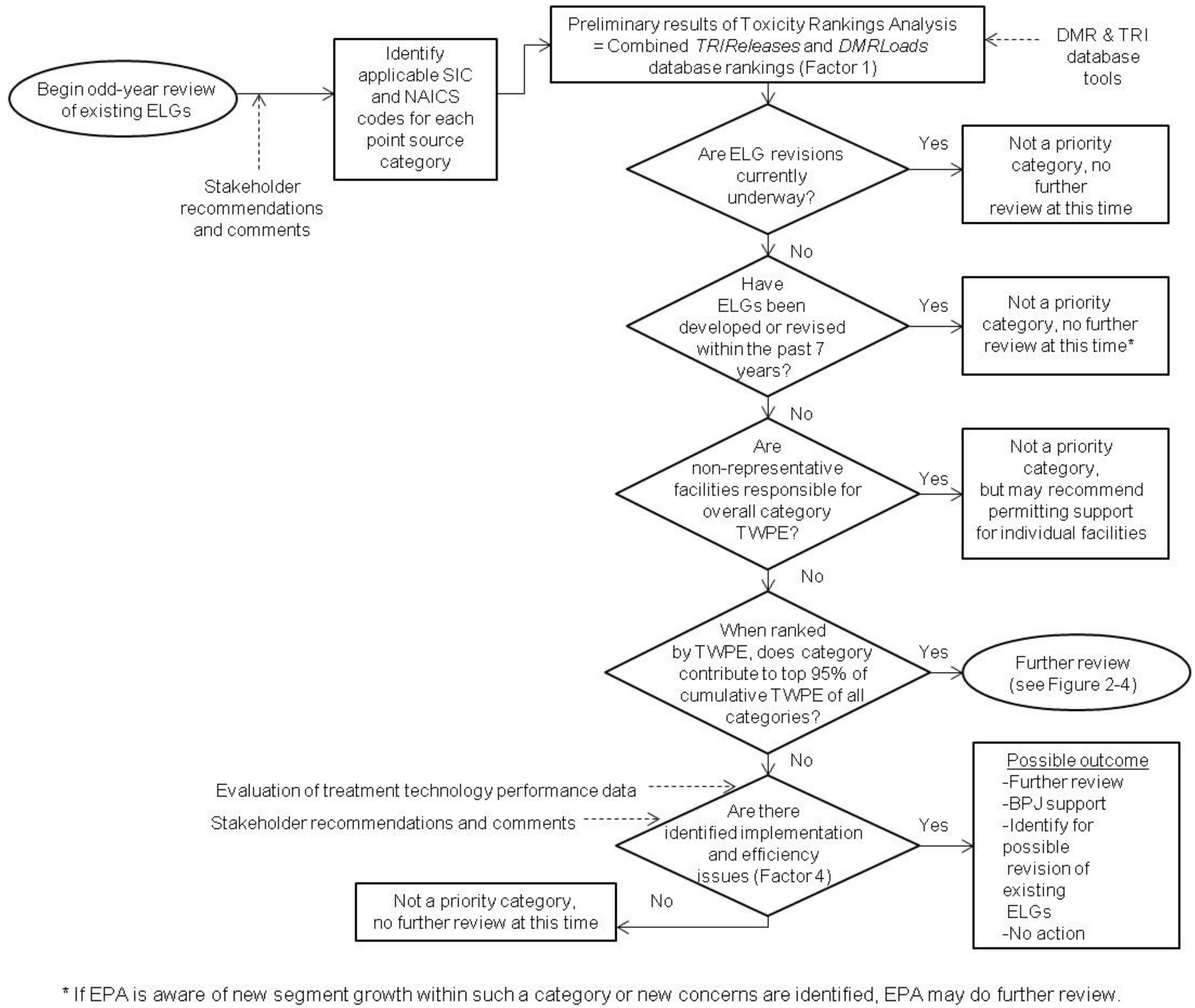
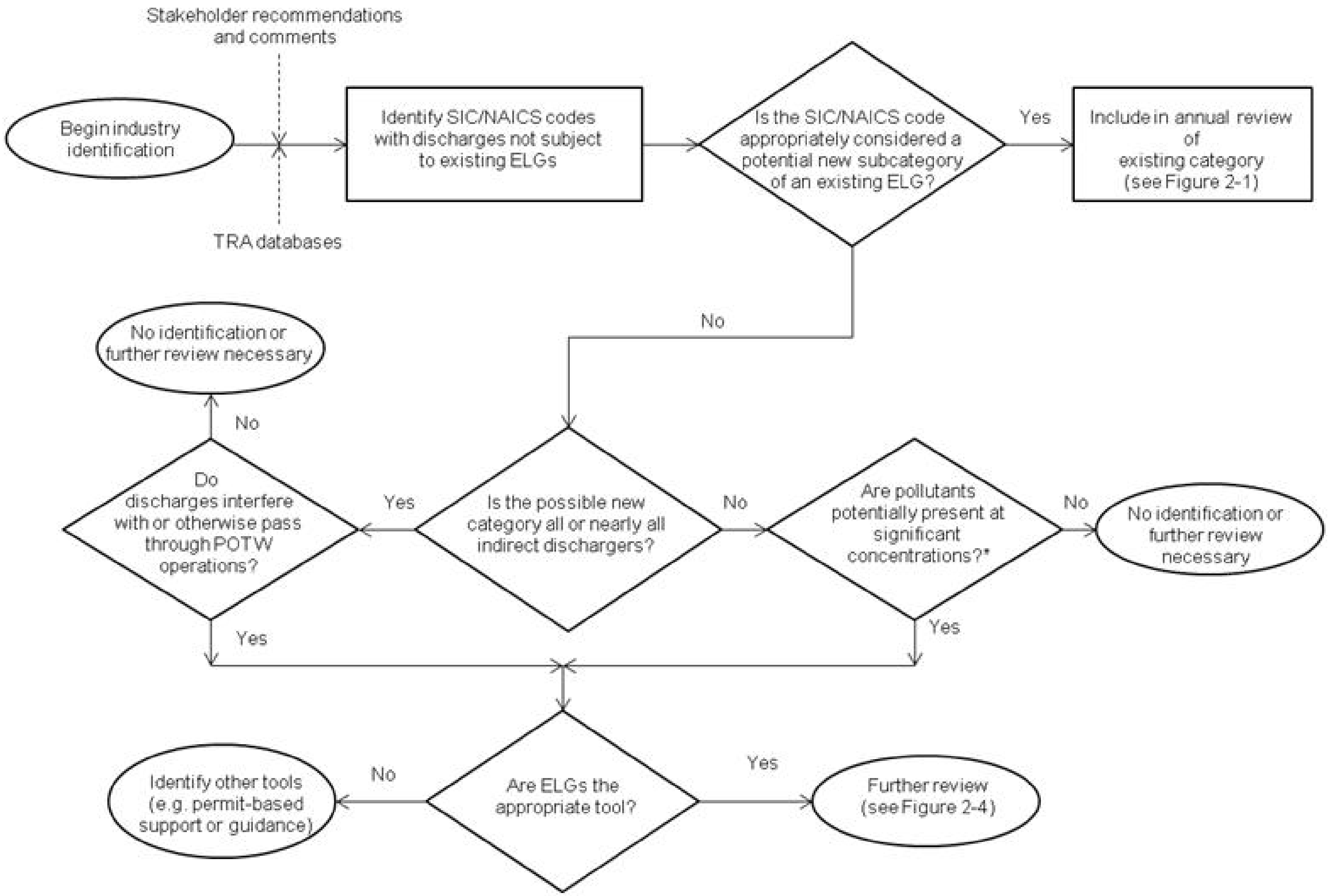


Figure 2-1. Odd-Year Annual Review of Existing ELGs



*Significant concentrations include levels above minimum levels from 40 CFR Part 136 or other EPA-approved methods, levels above treatability levels, or at levels of concern to human health and toxicity.

Figure 2-2. Odd-Year Identification of Possible New ELGs

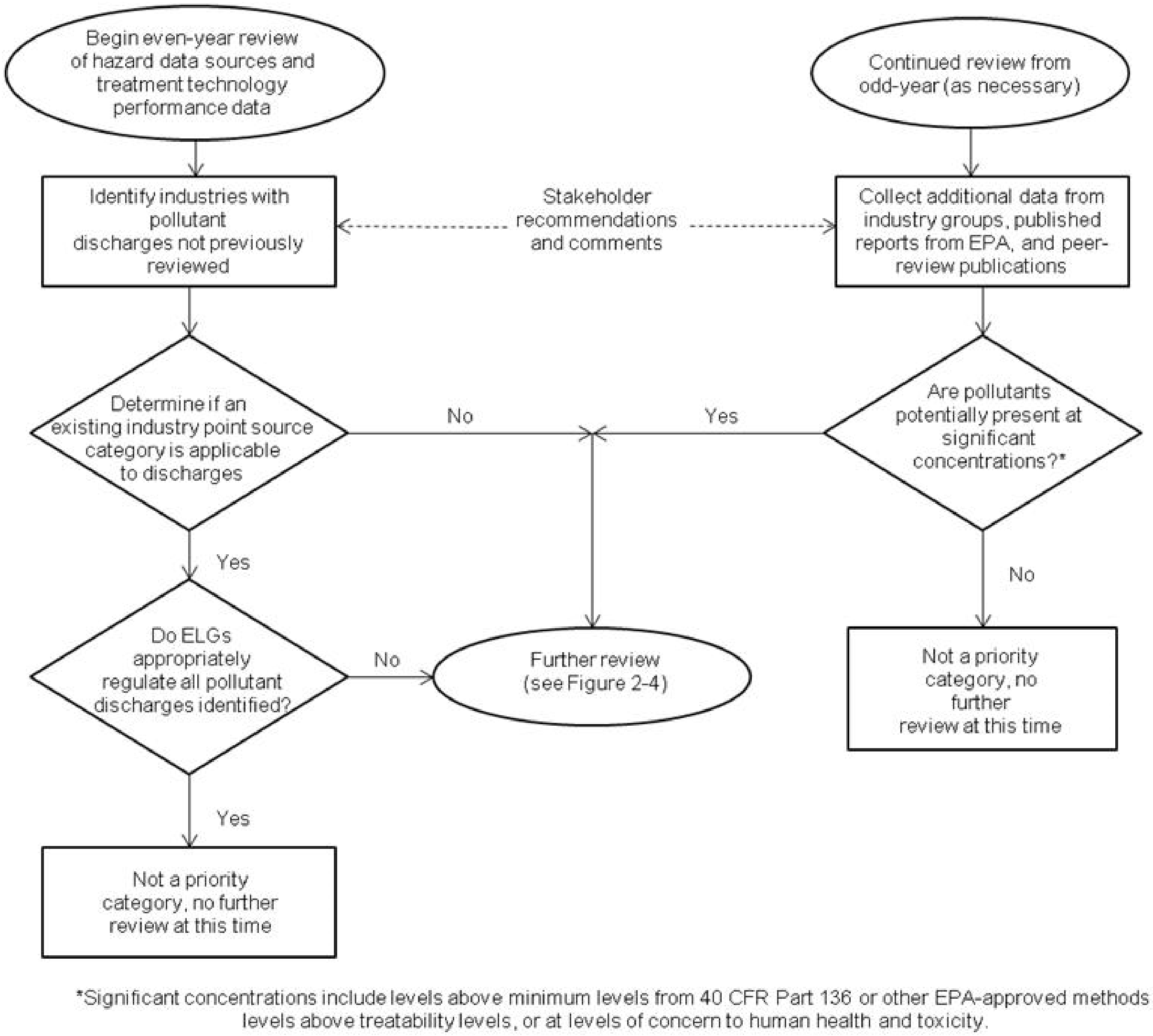


Figure 2-3. Even-Year Annual Review of Existing ELGs and Identification of Possible New ELGs

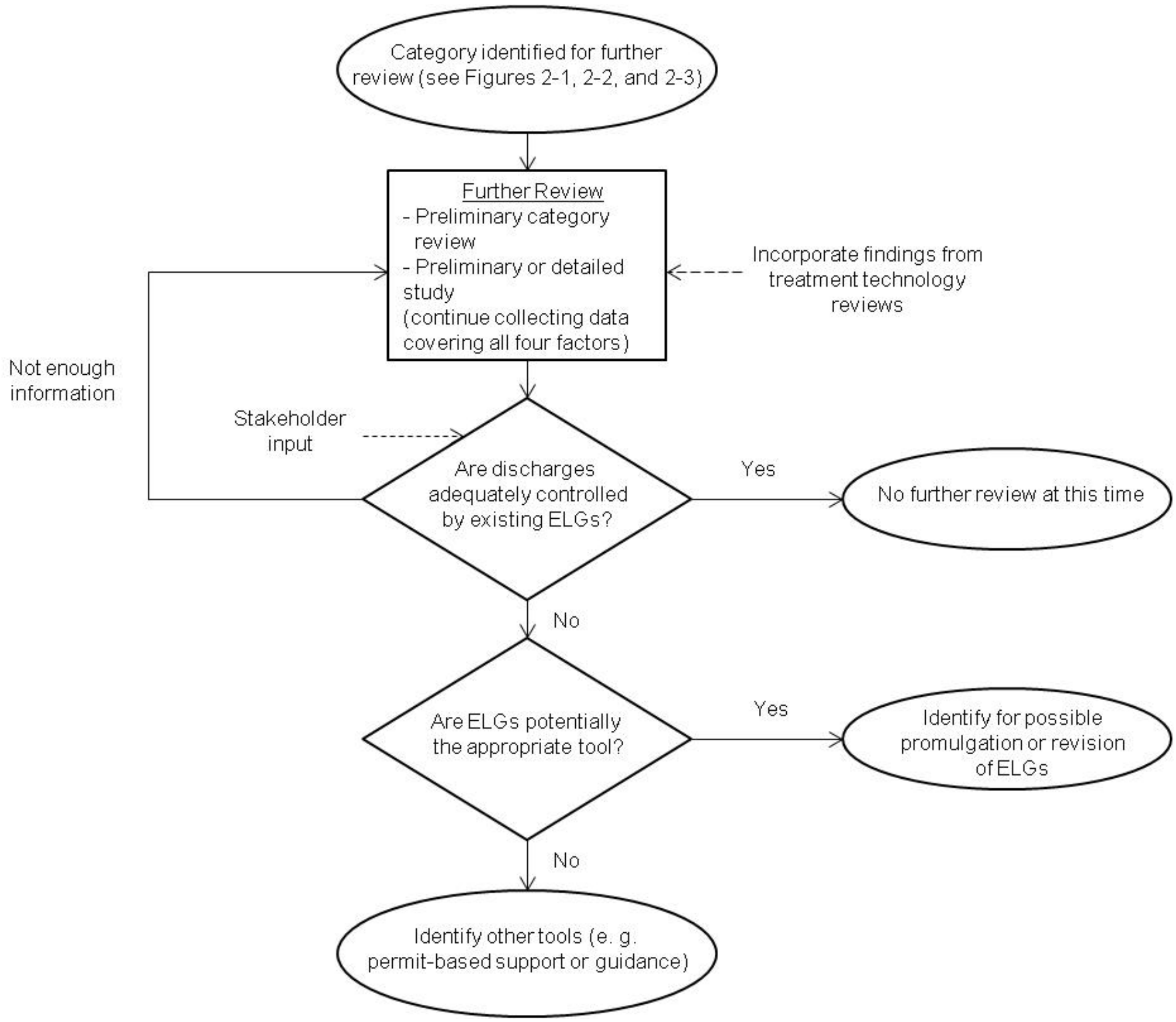


Figure 2-4. Further Review of Industrial Categories Identified During Odd- and Even-Year Annual Reviews

2.2.3 Effluent Guidelines Program Plans

CWA section 304(m)(1)(A) requires EPA to publish an Effluent Guidelines Program Plan (Plan) every two years that establishes a schedule for the annual review and revision, in accordance with section 304(b), of the effluent guidelines that EPA has promulgated under that section. EPA publishes the results of the TRA and preliminary category reviews conducted during the odd-year review in a Preliminary Plan and takes public comment. In the even-year following publication of the Preliminary Plan, EPA identifies and evaluates additional data sources and hazard analyses to supplement the TRA. EPA then publishes a Final Plan in the even-year. The Final Plan presents the compilation of the odd- and even-year reviews and public comments received on the Preliminary Plan. EPA may initiate, continue, or complete preliminary category reviews, or in-depth studies during the odd- or even-year reviews, depending upon when it identifies a category warranting further review. Additionally, EPA may publish the findings from these studies as part of the Preliminary or Final Plan, based on when during the planning cycle the study or review is completed.

EPA is coordinating its annual reviews under section 304(b) with publication of Plans under section 304(m) for three reasons. First, the annual reviews are inextricably linked to the planning effort because the results of each year of review can inform the content of the Preliminary and Final Plans (e.g., by identifying candidates for effluent guidelines revision for which EPA can schedule rulemaking in the plans, or by identifying point source categories for which EPA has not promulgated effluent guidelines). Second, even though it is not required to do so under either section 304(b) or section 304(m), EPA believes it can serve the public interest by periodically describing to the public the annual reviews (including the review process used) and the results of the reviews. Doing so at the same time as publishing the Preliminary and Final Plans makes both processes more transparent. Third, by requiring EPA to review all existing effluent guidelines each year, Congress appears to have intended for each successive review to build on the results of earlier reviews.

2.3 References for Background

1. U.S. EPA. 2006. Toxic Weighting Factor Development in Support of CWA 304(m) Planning Process. Washington, D.C. (June). EPA-HQ-OW-2004-0032-1634.

2. U.S. EPA. 2009. Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories. EPA-821-R-09-007. Washington, D.C. (October). EPA-HQ-OW-2008-0517-0515.

3. U.S. EPA. 2010. *U.S. EPA NPDES Permit Writers' Manual.* Washington, D.C. (September). EPA-833-K-10-001. Available online at: http://cfpub.epa.gov/npdes/writermanual.cfm?program_id=45.

4. U.S. EPA. 2014. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans.* Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170. DCN 07756.

PART II: EPA'S 2013 ANNUAL REVIEW METHODOLOGY AND ANALYSES

3. 2013 ANNUAL REVIEW DATA SOURCES, LIMITATIONS, AND QUALITY REVIEW

The Clean Water Act (CWA) requires EPA to conduct an annual review of existing effluent limitations guidelines and standards (ELGs). It also requires EPA to identify industrial categories without applicable ELGs. This section summarizes the process EPA used in the 2013 Annual Review to identify industrial categories for potential development of new or revised ELGs. This section also discusses the data sources used to complete this review and their limitations.

Consistent with its odd year review methodology, EPA performed a toxicity ranking analysis (TRA) of all industrial categories, including those subject to existing ELGs and those not currently regulated by ELGs, to identify categories discharging high levels of toxic pollutants relative to other categories. In performing the TRA, EPA relied on discharge monitoring report (DMR) data, contained in EPA's Permit Compliance System (PCS), the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES), and the Toxics Release Inventory (TRI).

In previous years in which it conducted a TRA, EPA generated two databases to facilitate the analysis of DMR and TRI data: *TRIReleases* and *DMRLoads*. The creation of these databases is explained in the *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories* (U.S. EPA, 2009), also known as the 2009 Screening-Level Analysis (SLA) Report.

In 2010 EPA launched the DMR Pollutant Loading Tool (the Loading Tool), an online application that calculates pollutant loadings from permit and DMR data from PCS and ICIS-NPDES. The Loading Tool ranks discharges, industries, and watersheds based on pollutant mass and toxicity. It also includes wastewater pollutant discharge data from TRI.[7] For the 2013 Annual Review, instead of generating the industrial rankings using the *TRIReleases* and *DMRLoads* databases as it had in past reviews, EPA relied on the industrial rankings provided in the "Top Industrial Dischargers of Toxic Pollutants" area of the Loading Tool.[8] The Loading Tool's industrial rankings are calculated using the same methodology presented in the 2009 SLA Report (U.S. EPA, 2009), except for one change to the selection of DMR measurement data from PCS and ICIS-NPDES, described in Section 3.1. The calculations specific to the Loading Tool are documented in the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* (U.S. EPA, 2012a). The data sources, and associated limitations, used by the Loading Tool to calculate industrial rankings are discussed in Section 3.2.

As a first step, EPA downloaded the DMR and TRI industrial rankings data from the Loading Tool and performed a quality review of the data, as discussed in Section 3.3. EPA incorporated any corrections identified during this review into the Loading Tool. EPA then downloaded the corrected DMR and TRI data from the Loading Tool and used these data to generate the final point source category rankings (see Section 4.2) and identify industrial categories for further review (see Section 5).

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[7] See a full overview of the DMR Pollutant Loading Tool here: http://cfpub.epa.gov/dmr/index.cfm.

[8] See the DMR Pollutant Loading Tool page, http://cfpub.epa.gov/dmr/everyday_searches.cfm, which presents the top industrial dischargers of toxic pollutants. EPA used this section of the DMR Pollutant Loading Tool to inform its 2013 TRA.

This section of the report does not revisit the details of the Loading Tool calculations, but instead outlines the change in TRA methodology from previous annual reviews as well as the data sources, limitations, data quality review, and the Loading Tool output data for EPA's 2013 Annual Review.

3.1 Methodology Change to the 2013 TRA

The industrial rankings provided in the "Top Industrial Dischargers of Toxic Pollutants" area of the Loading Tool,[9] used to inform the TRA for the 2013 Annual Review, are calculated using the same methodology presented in the 2009 SLA Report (U.S. EPA, 2009), except for one change to the selection of DMR measurement data from PCS and ICIS-NPDES, as discussed in this section.

As described in Section 3.2 of the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool,* the Loading Tool calculates DMR pollutant loadings using a quantity or concentration value, reported in the DMR data, and a wastewater flow. There are a total of two quantity and three concentration data fields that can be populated in the DMR data (i.e., five measurement value fields):

- Quantity 1;
- Quantity 2;
- Concentration 1;
- Concentration 2; and
- Concentration 3.

These five measurement fields can represent average or maximum quantity values or minimum, average, or maximum concentration values. EPA's goal for calculating pollutant loads is to characterize the average pollutant loading; therefore, the Loading Tool selects the appropriate DMR measurement data field using a hierarchy that gives priority to the average values.

In previous reviews, because the load calculation using the quantity value necessitated fewer variables in the calculation, EPA prioritized average quantities over average concentrations. However, the pollutant loading calculation methodology in the Loading Tool selects the same DMR measurement as the permit limit, which could be either concentration or quantity, to calculate the pollutant load and load over limit estimates. As a result, because EPA relied on the Loading Tool outputs for the 2013 Annual Review, the pollutant loadings are calculated by prioritizing measurements that are the same measurement as the permit limit (concentration or quantity). Even with this change to selecting measurement type, the Loading Tool still prioritizes average measurements over minimum and/or maximum measurements. See Section 3.2.2 of the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* for more specific information on the calculations (U.S. EPA, 2012a).

[9] See the DMR Pollutant Loading Tool page: http://cfpub.epa.gov/dmr/everyday_searches.cfm, which presents the top industrial dischargers of toxic pollutants. EPA used this section of the DMR Pollutant Loading Tool to inform its 2013 TRA.

3.2 Data Sources and Limitations

This section provides general information on the use and limitations of Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes, toxic weighting factors (TWFs), TRI data, and DMR data to calculate the industrial category rankings in the Loading Tool.

3.2.1 SIC Codes

The SIC code system was developed to help with the collection, aggregation, presentation, and analysis of data from the U.S. economy (OMB, 1987). The different parts of the SIC code signify the following:

- The first two digits represent the major industry group.
- The third digit represents the industry group.
- The fourth digit represents the industry.

For example, major SIC code 26 (Paper and Allied Products) includes all pulp, paper, and paperboard manufacturing operations. Within SIC code 26, the three-digit SIC codes are used to distinguish the type of facility: 263 for paperboard mills, 265 for paperboard containers and boxes, etc. Within SIC code 265, the four-digit SIC codes are used to separate facilities by product type: 2652 for setup paperboard boxes, 2653 for corrugated and solid fiber boxes, etc.

Although developed to track economic data, the SIC system is used by many government agencies, including EPA, to promote data comparability. In the SIC system, each establishment is classified according to its primary economic activity, which is determined by its principal product or group of products. An establishment may have activities in more than one SIC code. Some data collection organizations track only the primary SIC code for each establishment. PCS and ICIS-NPDES include one four-digit SIC code, reflecting the principal activity causing the discharge at each facility.

EPA does not define the applicability of its ELGs by SIC code, but by industry and process descriptions. For this reason, regulations for an individual point source category may apply to one SIC code, multiple SIC codes, or a portion of the facilities in an SIC code. Therefore, to use data that identify facilities by SIC code (e.g., PCS and ICIS-NPDES), EPA mapped each four-digit SIC code to an appropriate point source category, as summarized in the "SIC/Point Source Category Crosswalk" table (Table B-1 in Appendix B).

EPA has not established national ELGs for all SIC codes. Table B-2 in Appendix B lists the SIC codes for which facility discharge data are available in PCS and ICIS-NPDES, but for which EPA could not identify an applicable point source category. For a more detailed discussion, see Section 6 of the 2009 SLA Report (U.S. EPA, 2009).

3.2.2 NAICS Codes

In 1997, the U.S. Census Bureau introduced the NAICS code system, to better represent the economic structure of countries participating in the North American Free Trade Agreement and to remedy deficiencies of the SIC code system. The nomenclature and format of NAICS and SIC codes are presented in Table 3-1.

Table 3-1. Nomenclature and Format of NAICS and SIC Codes

NAICS		SIC	
2-digit	Sector	Letter	Division
3-digit	Subsector	2-digit	Major Group
4-digit	Industry Group	3-digit	Industry Group
5-digit	NAICS Industry	4-digit	Industry
6-digit	U.S. Industry	N/A	N/A

For example, below are the SIC and NAICS codes for the folding paperboard box manufacturing industry.

In the SIC code system, the classification is less stratified:

- 26: Paper and Allied Paper Products;
  - 265: Paperboard Containers and Boxes;
    - 2657: Folding Paperboard Boxes, Including Sanitary (except paperboard backs for blister or skin packages).

In the NAICS code system the classification is more stratified:

- 32: Manufacturing;
  - 322: Paper Manufacturing;
    - 3222: Converted Paper Product Manufacturing;
      - 322212: Folding Paperboard Box Manufacturing.

The NAICS system is used for industrial classification purposes at many government agencies, including EPA. As in the SIC system, each establishment is classified according to its primary economic activity, which is determined by its principal product or group of products. An establishment may have activities in more than one NAICS code.

EPA does not define the applicability of its ELGs by NAICS code, but by industry and process descriptions. For this reason, regulations for an individual point source category may apply to one NAICS code, multiple NAICS codes, or a portion of the facilities in an NAICS code. Therefore, to use data that identify facilities by NAICS code (e.g., TRI), EPA mapped each six-digit NAICS code to an appropriate point source category, as summarized in the "NAICS/Point Source Category Crosswalk" table (Table B-3 in Appendix B). This table was based on the SIC/Point Source Category Crosswalk table (Table B-1 in Appendix B) and the NAICS/SIC Code Crosswalk that EPA developed for past comparisons.

There are some NAICS codes for which EPA has not established national ELGs. Table B-4 in Appendix B lists the NAICS codes for which facility discharge data are available in TRI, but for which EPA could not identify an applicable point source category. For a more detailed discussion, see Section 6 of the 2009 SLA Report (U.S. EPA, 2009).

3.2.3 Toxic Weighting Factors

As part of the Effluent Guidelines Program, EPA developed a wide variety of tools and methodologies to evaluate effluent discharges. Among these tools is a Toxics Database compiled from over 100 references for more than 1,900 pollutants. The Toxics Database includes aquatic life and human health toxicity data, as well as physical and chemical property data. Each pollutant in this database is identified by a unique Chemical Abstract Service (CAS) number. EPA uses the Toxics Database to calculate a pollutant-specific TWF that accounts for differences in toxicity across pollutants and allows comparison of mass loadings of different pollutants. The TWFs are used in the Loading Tool to calculate a “toxic-equivalent” loading (in pounds-equivalent per year). The Loading Tool multiplies a mass loading of a pollutant in pounds per year by the TWF to derive a toxicity weighted pound equivalent (TWPE). The Draft and Final TWF Development Documents discuss the use and development of TWFs in detail (U.S. EPA, 2005, 2006).

EPA derives TWFs from chronic aquatic life criteria (or toxic effect levels) and human health criteria (or toxic effect levels) established for the consumption of fish. In the TWF method for assessing water-based effects, these aquatic life and human health toxicity levels are compared to a benchmark value that represents the toxicity level of a specified pollutant. EPA chose copper, a metal commonly detected and removed from industrial effluent, as the benchmark pollutant. The Final TWF Development Document contains details on how EPA developed its TWFs (U.S. EPA, 2006). During the 2013 Annual Review, EPA did not revise any TWFs or develop TWFs for chemicals that had not previously had TWFs. Table B-5 in Appendix B lists the TWFs for those chemicals in the Loading Tool for which EPA has developed TWFs.

3.2.4 Data from PCS and ICIS-NPDES

EPA has used data reported to PCS as a part of its TRA of existing effluent guidelines since the 2003 Annual Reviews (68 FRN 75515). Since 2002, EPA has been working to modernize PCS by creating a new data system called ICIS-NPDES. In 2006, some states began transitioning their DMR reporting from PCS to ICIS-NPDES. At the time EPA downloaded the data from the Loading Tool, 56 of the 71 states and territories/tribes had completely migrated to ICIS-NPDES. Therefore, for the 2013 Annual Review, EPA’s view of nationwide discharges was split between two sets of data. The Loading Tool combines the two systems (PCS and ICIS-NPDES) and generates industrial category rankings for all U.S. states and territories/tribes. Both PCS and ICIS-NPDES automate entering, updating, and retrieving NPDES data and track permit issuance, permit limits, monitoring data, and other data pertaining to facilities regulated by the NPDES program under the CWA.

More than 190,000 industrial facilities and 17,000 wastewater treatment plants have NPDES individual or general permits[10] for wastewater discharges to waters of the U.S. To

[10] A NPDES individual permit is written to reflect site-specific conditions of a single discharger based on information submitted by that discharger in a permit application. An individual permit is unique to that discharger.

provide an initial framework for setting permitting priorities, EPA developed a major/minor classification system for industrial and municipal wastewater discharges. Major discharges usually have the capability to impact receiving waters if not controlled and, therefore, have received more regulatory attention than minor discharges. Permitting authorities classify discharges as major based on an assessment of six characteristics (U.S. EPA, 2010):

- Toxic pollutant potential;
- Discharge flow: stream flow ratio;
- Conventional pollutant loading;
- Public health impact;
- Water quality factors; and
- Proximity to coastal waters.

Facilities with major discharges must report compliance with NPDES permit limits via monthly DMRs submitted to the permitting authority. The permitting authority enters the reported DMR data into PCS or ICIS-NPDES, including pollutant concentration and quantity values and identification of any types of permit violations. During the 2013 Annual Review, EPA identified approximately 6,200 facilities (including sewerage systems) with major discharges for which PCS and ICIS-NPDES have extensive records.

Minor discharges may, or may not, adversely impact receiving water if not controlled. Facilities with minor discharges must report compliance with NPDES permit limits via monthly DMRs submitted to the permitting authority; however, EPA does not require the permitting authority to enter data in the PCS and ICIS-NPDES databases. For this reason, the PCS and ICIS-NPDES databases include data only for a limited set of minor discharges (i.e., if the state or other permitting authority chooses to include these data). During the 2013 Annual Review, EPA identified approximated 25,000 facilities with minor discharges for which PCS and ICIS-NPDES have extensive records.

Parameters in PCS and ICIS-NPDES include water quality parameters (such as pH and temperature), specific chemicals, conventional parameters (such as biochemical oxygen demand and total suspended solids), and flow rates. Although other pollutants may be discharged, PCS and ICIS-NPDES contain data only for the parameters identified in the facility's NPDES permit. Facilities typically report monthly average pounds per day discharged, but also report daily maxima and average pollutant concentrations.

3.2.4.1 Utility of PCS and ICIS-NPDES

The data collected in the PCS and ICIS-NPDES data systems are particularly useful for the ELG planning process for the following reasons:

- PCS and ICIS-NPDES combined are national in scope, including data from all 50 states and 21 U.S. territories/tribes.

NPDES general permits are written to cover multiple dischargers with similar operations and types of discharges based on the permit writer's professional knowledge of those types of activities and discharges (U.S. EPA, 2007).

- Discharge reports included in PCS and ICIS-NPDES are based on effluent chemical analysis and metered flows using known analytical methods.
- PCS and ICIS-NPDES include discharge data for facilities in any SIC code.

3.2.4.2 Limitations of PCS and ICIS-NPDES

Limitations of the data collected in the PCS and ICIS-NPDES data systems include the following:

- The data systems contain data only for pollutants a facility is required by permit to monitor; the facility is not required to monitor or report all pollutants actually discharged.
- The data systems include limited discharge monitoring data from minor dischargers.
- The data systems do not include data characterizing indirect discharges from industrial facilities to POTWs.
- In some cases, the data systems identify the type of wastewater (e.g., process wastewater, stormwater, noncontact cooling water) being discharged. Many do not, though, so total flow rates reported to PCS and ICIS-NPDES may include stormwater and noncontact cooling water, as well as process wastewater.
- Pipe identification is not always clear. For some facilities, internal monitoring points are labeled as outfalls, and PCS and ICIS-NPDES may double-count a facility's discharge. In other cases, an outfall may be labeled as an internal monitoring point, and PCS and ICIS-NPDES may not account for all of a facility's discharge.
- Facilities do not always report the duration of discharge in their DMRs; therefore, some pollutant loadings are calculated using continuous discharge assumptions (365 days per year), which may overestimate the toxic releases.
- Facilities are identified by SIC code, not point source category. For some SIC codes, it may be difficult or impossible to identify the point source category that is the source of the reported wastewater discharges.[11]
- PCS and ICIS-NPDES were designed as a permit compliance tracking system and do not contain production information that would benefit the review of discharges compared to production-based limitations.
- PCS and ICIS-NPDES data may be entered into the data systems manually, which leads to data entry errors.
- In PCS and ICIS-NPDES, data may be reported as an average quantity, maximum quantity, average concentration, maximum concentration, and/or minimum concentration. For many facilities and/or pollutants, average quantity values are not provided. In these cases, EPA is limited to estimating facility loads based on

[11] ICIS-NPDES includes a data field for applicable ELGs; however, completion of this field is not required and it is typically not populated.

the maximum quantity. Section 3.2.3 of the 2009 SLA Report discusses the maximum quantity issue in detail (U.S. EPA, 2009).

Despite these limitations, EPA determined that the PCS and ICIS-NPDES data summarized in the Loading Tool were usable for the TRAs and prioritizations of the toxic-weighted pollutant loadings discharged by industrial facilities. The combined PCS and ICIS-NPDES databases remain the only data source quantifying the pounds of regulated pollutants discharged directly to surface waters of the U.S.

3.2.5 Data from TRI

Section 313 of the Emergency Planning and Community Right-to-Know Act requires facilities meeting specified thresholds to report their annual releases and other waste management activities for listed toxic chemicals to the TRI. Facilities must report the quantities of toxic chemicals recycled, collected, and combusted for energy recovery, treated for destruction, or otherwise disposed of. Facilities must complete a separate report for each chemical manufactured, processed, or used in excess of the reporting threshold. For the 2013 TRA, EPA used TRI data for reporting year 2011 because they were the most recent available at the time the review began.

A facility must meet three criteria to be required to submit a TRI report for a given reporting year:

1. *NAICS Code Determination*. The facility's primary NAICS code determines if TRI reporting is required. The primary NAICS code is associated with the facility's revenues, and may not relate to its pollutant discharges (71 FR 32464). The TRI-covered industries include:

    - 212, Mining;
    - 221, Utilities;
    - 31–33, Manufacturing;
    - All other miscellaneous manufacturing (includes 1119, 1131, 2111, 4883, 5417, 8114);
    - 424, Merchant Wholesalers, Non-durable Goods;
    - 425, Wholesale Electronic Markets and Agent Brokers;
    - 511, 512, 519, Publishing;
    - 562, Hazardous waste; and
    - Federal facilities.

2. *Number of Employees*. Facilities must have 10 or more full-time employees or their equivalent. EPA defines a "full-time equivalent" as a person who works 2,000 hours in the reporting year (there are several exceptions and special circumstances that are well defined in the TRI reporting instructions).

3. *Activity Thresholds*. If the facility is in a covered NAICS code and has 10 or more full-time employee equivalents, it must conduct an activity threshold analysis for every chemical and chemical category on the current TRI list. It must determine whether it manufactures, processes, or otherwise uses each chemical at or above the appropriate activity threshold. Reporting thresholds are not based on the

amount of release. All TRI thresholds are based on mass, not concentration. Different thresholds apply for persistent, bioaccumulative, toxic (PBT) chemicals than for non-PBT chemicals. Generally, non-PBT chemical threshold quantities are 25,000 pounds for manufacturing and processing activities and 10,000 pounds for other use activities. All thresholds are determined per chemical over the calendar year. For example, mercury compounds are considered PBT chemicals. The TRI reporting guidance requires any facility that manufactures, processes, or otherwise uses 10 grams or more of mercury compounds to report it to TRI (U.S. EPA, 2000).

In TRI, facilities report annual loads released to the environment of each toxic chemical or chemical category that meets reporting requirements. Facilities must report onsite releases or disposal to air, receiving streams, land, underground wells, and several other categories. They must also report the amount of toxic chemicals in wastes transferred to offsite locations, (e.g., publicly owned treatment works (POTWs), commercial waste disposal facilities).

Facilities reporting to TRI are not required to sample and analyze waste streams to determine the quantities of toxic chemicals released. They may estimate releases based on mass balance calculations, published emission factors, site-specific emission factors, or other approaches. Facilities are required to indicate, by a reporting code, the basis of their release estimate. TRI's reporting guidance is that, for most chemicals reasonably expected to be present but measured below the detection limit, facilities should use half the detection limit to estimate the mass released. However, TRI guidance indicates that for dioxins and dioxin-like compounds, non-detects should be treated as zero.

TRI allows facilities to report releases as specific numbers or as ranges, if appropriate. Specific estimates are encouraged if data are available to ensure the accuracy; however, TRI allows facilities to report releases in the following ranges: 1 to 10 pounds, 11 to 499 pounds, and 500 to 999 pounds. If a facility reports a range for a direct or indirect discharge, TRI uses the middle of the range for the TRI output (U.S. EPA, 2013).

3.2.5.1 Utility of TRI Data

The data collected in TRI are particularly useful for ELG planning for the following reasons:

- TRI is national in scope, including data from all 50 states and U.S. territories/tribes.
- TRI includes releases to POTWs, not just direct discharges to surface water.
- TRI includes discharge data from manufacturing NAICS codes and some other industrial categories.
- TRI includes releases of many toxic chemicals, not just those in facility discharge permits.

3.2.5.2 Limitations of TRI

For purposes of ELG planning, limitations of the data collected in TRI include the following:

- Small establishments (fewer than 10 employees) are not required to report, nor are facilities that do not meet the reporting thresholds. Thus, facilities reporting to TRI may be a subset of an industry.
- Release reports are, in part, based on estimates, not measurements. Due to TRI guidance, they may overstate releases, especially at facilities with large wastewater flows.
- Certain chemicals (e.g., polycyclic aromatic compounds (PACs), dioxin and dioxin-like compounds) are reported as a class, not as individual compounds. Because the individual compounds in most classes have widely varying toxic effects, the potential toxicity of chemical releases can be inaccurately estimated.
- Facilities are identified by NAICS code, not point source category. For some NAICS codes, it may be difficult or impossible to identify the point source category that is the source of the toxic wastewater releases.
- TRI only requires facilities to report certain chemicals; therefore, all pollutants discharged from a facility may not be captured.

Despite these limitations, EPA determined that the TRI data presented in the Loading Tool were usable for the 2013 toxicity rankings analysis and prioritization of the toxic-weighted pollutant loadings discharged by industrial categories.

3.2.6 TRI and DMR Comparative Analysis

To facilitate EPA's understanding of the usefulness and limitations of the DMR and TRI data, the Loading Tool has a comparison feature that highlights the differences in discharges in DMR and TRI at the pollutant and facility level. For example, EPA can compare DMR and TRI data to identify the following for an industrial category:

- Overestimations in TRI pollutant loadings (identified by comparing reported TRI discharges and DMR discharges for the same facility/pollutant loading).
- Pollutants not currently regulated or permitted for discharge (identified by TRI pollutant loadings for facilities and pollutants that are absent from the DMR data).

3.3 2011 DMR and TRI Data Quality Review

EPA evaluated the quality of the 2011 DMR and TRI data from the Loading Tool to identify any data corrections prior to generating the final 2013 point source category rankings (see Section 4.2) and further investigating industrial categories for possible effluent guidelines revisions (see Section 5). This evaluation considered data completeness, comparability, accuracy, and reasonableness. The *Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP)* describes the quality objectives in more detail (ERG, 2013).

3.3.1 Data Quality Review and Corrections to the 2011 DMR Data

To evaluate completeness, comparability, accuracy, and reasonableness of the 2011 DMR data, EPA performed the following checks:

Completeness. EPA compared counts of 2011 DMR reporting facilities in the Loading Tool to counts in *DMRLoads2009* to confirm the completeness of the 2011 DMR data, as shown in Table 3-2. Because the numbers of major and minor facilities reporting DMR data are similar between 2009 and 2011, EPA determined that the 2011 DMR dataset contained in the Loading Tool was complete for the purpose of use in the 2013 Annual Review.

Table 3-2. Results of 2011 DMR Data Completeness Check

Number of Major Dischargers		Number of Minor Dischargers	
DMR 2009	**DMR 2011**	**DMR 2009**	**DMR 2011**
1,944	1,908	15,565	14,530

Sources: *DMRLTOutput2011_v1 and DMRLoads2009_v2*.

Comparability. EPA compared the 2011 DMR data from the Loading Tool to *DMRLoads2009* to identify pollutant discharges or wastewater flows that differed more than the year-to-year variation of other chemicals and facilities. EPA used this comparison to determine if quantity, concentration, or flow corrections were appropriate for facility discharges with the highest TWPE. If the comparison was unavailable (e.g., the pollutant was not previously reported), EPA contacted the facility or permitting authority. For a summary of the facility-specific reviews, see Table 3-3. All of the data corrections identified as part of this review were incorporated into the Loading Tool before EPA calculated the final point source category rankings.

Accuracy and Reasonableness. To evaluate the accuracy and reasonableness of the 2011 DMR data, EPA reviewed the facility and pollutant discharges that had the greatest impact on total category loads and rankings in the 2011 DMR Loading Tool, based on toxic-weighted pounds discharged. For each identified facility, EPA used the following steps to review the accuracy and reasonableness of the loads calculated from PCS and ICIS-NPDES data:

1. Reviewed database corrections from previous TRAs to determine whether corrections made during previous reviews should apply to the 2011 DMR discharges.

2. Reviewed 2011 DMR facility SIC code information (including the facility's NPDES permit and permit fact sheet) to determine if the facility was assigned to the point source category that best applied to the majority of its discharges, or identified pollutant-level point source category assignments where facilities have operations subject to more than one point source category.

3. Reviewed the Loading Tool's 2011 DMR facility loading calculations, compared Loading Tool data to data available in EPA's online Envirofacts data system or from the facility's NPDES permit and permit fact sheet, hand-calculated annual

pollutant loads, and compared the results to the 2011 DMR Loading Tool output data to verify the accuracy of the calculated facility loads.

4. Reviewed PCS and ICIS-NPDES pipe description information available in PCS, EPA's online Envirofacts data system, ICIS-NPDES supporting tables, or the facility's NPDES permit and permit fact sheet to identify monitored pollutant discharges that are:

   — Intermittent (e.g., tidal, seasonal, or occurring after a storm);

   — Internal monitoring locations from which wastewater is combined with other waste streams and monitored again, resulting in double-counting loads; and

   — Not representative of category discharges (e.g., stormwater runoff from nonprocess areas, noncontact cooling water, or wastewater related to operations in another point source category).

5. Reviewed PCS and ICIS-NPDES output data for pollutants that should be excluded from the 2011 DMR load calculation because they are in units that cannot be converted to quantities (e.g., kilograms per day) or concentrations (e.g., milligrams per liter).[12]

6. Contacted the state permitting authority or facility to determine if the data were reported and transcribed correctly.

Table 3-3 presents EPA's facility review of the 2011 DMR data. In addition to this review, EPA reviewed historical data changes identified during previous TRAs to determine if they are still applicable to the 2011 DMR data. Table C-1 in Appendix C of this report lists all corrections EPA made to the 2011 DMR data before generating the Final 2013 Point Source Category Rankings.

[12] Table A-5 in Appendix A in the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* lists pollutants excluded from the Loading Tool (U.S. EPA, 2012a). Examples include: temperature, pH, fecal coliform, and whole effluent toxicity.

Table 3-3. Summary of 2011 DMR Facility Data Quality Review

Facility	Location	Point Source Category	Pollutant(s) in Question	Review Findings	Action Taken/ Database Correction
Elkem Metals Company	Alloy, WV	Ferroalloy Manufacturing	Cadmium, lead, selenium, arsenic, chromium, nickel, vanadium, antimony, and aluminum	July through November 2011 metal concentrations were six orders of magnitude higher than December concentrations for all outfalls. Facility contact confirmed that July through November concentrations needed to be divided by 1,000,000 (Wagner, 2013).	Divided July through November metal concentrations by 1,000,000.
St. Louis Co. Water	St. Louis, MO	Drinking Water Treatment	Iron, total residual chlorine	All 2011 iron concentration values for outfalls 001, 002, and 003 range from 11,300 to 322,000 mg/L. All 2011 total residual chlorine concentration values for outfalls 001 and 002 range from 840 to 2,300 mg/L. The state contact confirmed that iron and total residual chlorine concentration values are in µg/L, not mg/L (Abernathy, 2013).	Divided outfall 001, 002, and 003 iron concentrations by 1,000 and divided outfall 001 and 002 total residual chlorine concentrations by 1,000.
Doe Run Company	Viburnum, MO	Ore Mining and Dressing	Lead, cadmium, zinc, copper	March through September 2011 lead, cadmium, zinc, and copper concentrations for outfalls 001, 002, and 003 are 100 to 1,000 higher than December 2011 and all 2009 concentrations. June and September 2011 flows for outfall 002 are six orders of magnitude higher than March and December 2011 flows.	Divided March through September 2011 lead, cadmium, zinc, and copper concentrations by 100 or 1,000, as appropriate, for outfalls 001, 002, and 003. Divided outfall 002 June and September flows by 1,000,000.
Fletcher Mine/Mill	Bunker, MO	Ore Mining and Dressing	Lead	2011 lead concentrations for outfall 001 are high. State contact confirmed that 2011 lead concentrations are in µg/L, not mg/L (Abernathy, 2013).	Divided 2011 lead concentrations for outfall 001 by 1,000.
Armour Creek Landfill	Nitro, WV	Landfills/Waste Combustors	2,3,7,8-TCDD	State contact confirmed that 2011 TCDD concentration for outfall 011 is non-detect (Mullins, 2013).	Zeroed 2011 TCDD discharge for outfall 011.

Table 3-3. Summary of 2011 DMR Facility Data Quality Review

Facility	Location	Point Source Category	Pollutant(s) in Question	Review Findings	Action Taken/ Database Correction
Bullitt County Landfill	Lebanon Junction, KY	Landfills/Waste Combustors	Flow	February, March, June, July, November, and December 2011 flows for outfalls 001 and 002 are 10,000 to 100,000 times higher than other months' flows. EPA contacted the state during the 2010 Annual Review and confirmed that large flows were reported as GPD, not MGD. Because the 2011 flows are off by the same order of magnitude, EPA assumes the same correction applies (Becker, 2010).	Divided February, March, June, July, November, and December 2011 flows for outfalls 001 and 002 by 10,000 or 100,000, as appropriate.
Brushy Creek Mine/Mill	Bunker, MO	Ore Mining and Dressing	Lead, cadmium, zinc, copper	2011 lead, cadmium, zinc, and copper concentrations for outfall 001 are high. State contact confirmed that 2011 lead, cadmium, zinc, and copper concentrations are in µg/L, not mg/L (Abernathy, 2013).	Divided 2011 lead, cadmium, zinc, and copper concentrations for outfall 001 by 1,000.
Doe Run Co. West Fort Facility	Bunker, MO	Ore Mining and Dressing	Lead, cadmium, zinc, copper	April 2011 lead, cadmium, zinc, and copper concentrations for outfall 004 are high. State contact confirmed that April 2011 lead, cadmium, zinc, and copper concentrations are in µg/L, not mg/L, for outfall 004 (Abernathy, 2013).	Divided April 2011 lead, cadmium, zinc, and copper concentrations for outfall 004 by 1,000.
Alcoa Inc.—North Plant	Alcoa, TN	Aluminum Forming	PCB, cyanide	State contact confirmed that October 2011 PCB discharge for outfall N06 is non-detect. State contact also confirmed that the April 2011 cyanide concentration for outfall SW1 should be 0.01 mg/L, not 0.1 mg/L (Waits, 2013).	Zeroed October 2011 PCB discharge for outfall N06. Corrected April 2011 cyanide discharge to 0.01 mg/L for outfall SW1.
IMC Phosphates Company—Faustina	Donaldsonville, LA	Inorganic Chemicals	Fluoride	State contact identified that the June 2011 fluoride quantity for outfall 002 was incorrect as a result of a data entry error (Peterson, 2013).	Revised June 2011 fluoride quantity for outfall 002 from 739,000 kg/day to 1,360 kg/day.

Table 3-3. Summary of 2011 DMR Facility Data Quality Review

Facility	Location	Point Source Category	Pollutant(s) in Question	Review Findings	Action Taken/ Database Correction
Reverse Osmosis Treatment Facility	Brighton, CO	Drinking Water Treatment	Sulfide	The September 2011 sulfide concentration is five orders of magnitude higher than the other reported concentrations for outfall 011.	Divided the September 2011 concentration by 100,000.
Palm Coast WTP #3—Membrane C	Palm Coast, FL	Drinking Water Treatment	Hydrogen sulfide	Hydrogen sulfide concentration values range from 168 to 300 mg/L for outfall 001. Facility was contacted as part of the 2011 Annual Review and it was determined that the units for hydrogen sulfide were in LB/1000GA instead of mg/L (Sedano, 2011).	Converted the hydrogen sulfide concentrations to mg/L from LB/1000GA (pounds per 1000 gallons of water) using conversions from the 2011 Annual Review.
Forest View MHP	Wooster, OH	Landfills/Waste Combustors	Ammonia as N	January through July 2011 ammonia as N concentrations for outfall 001 are four to seven orders of magnitude higher than permit limitations.	Divided ammonia as N concentrations by 10,000 or 10,000,000, as appropriate.
Honeywell International Incorporated	Baton Rouge, LA	Inorganic Chemicals	Hexachlorobenzene, PACs	Facility contact confirmed that all hexochlorobenzene and polycyclic aromatic compounds (PACs) are measured below the minimum quantification level (MQL). The facility permit states that "if any individual analytical test result is less than the MQL listed in the permit, a value of zero may be used for that individual result for the DMR calculations and reporting requirements." Previously, the facility reported concentrations below the MQL as zero. However, for the 2010 and 2011 DMRs, the facility decided to take a more conservative approach in reporting and did not list zero for values below the MQL (Campesi, 2013).	Revised 2011 hexachlorobenzene and PACs discharges to be 0 pounds per year.

Table 3-3. Summary of 2011 DMR Facility Data Quality Review

Facility	Location	Point Source Category	Pollutant(s) in Question	Review Findings	Action Taken/ Database Correction
Alcan Rolled Products, LLC	Ravenswood, WV	Aluminum Forming	Lead	EPA contacted the state as part of the 2011 Annual Review and confirmed that all 2009 lead measurements were non-detect for outfall 002. Because the 2011 lead concentration values for outfall 002 are similar to 2009, EPA assumes the same correction applies (Clevenger, 2011).	Zeroed 2011 lead discharges for outfall 002.
Marion Co. Sanitary Landfill	Lebanon, KY	Landfills/Waste Combustors	All pollutants	June 2011 flow for outfalls 001 and 002 is five orders of magnitude higher than the March 2011 flow.	Divided June 2011 flow for outfalls 001 and 002 by 100,000.
U.S. DOE Paducah Project—Paducah Remediation Services, LLC	West Paducah, KY	Inorganic Chemicals	PCB	State contact confirmed the 2011 PCB discharges for outfall 019 (Hokanson, 2013).	No change.
Climax Molybdenum Company	Climax, CO	Ore Mining and Dressing	All pollutants	May through July 2011 flows for outfall 001 are high. State contact confirmed the 2011 flows for outfall 001 (Morgan, 2013).	No change.
Arkema, Inc.	Carrollton, KY	Inorganic Chemicals	Tin	State contact confirmed the 2011 tin discharges for outfall 001 (Hokanson, 2013).	No change.
Solutia, Inc. — Anniston Plant	Anniston, AL	Inorganic Chemicals	PCB-1242	During the 2011 Annual Review, EPA contacted the facility to confirm similar PCB-1242 concentrations and flows for outfall 012. The facility contact confirmed the data for outfall 012. The 2011 DMR data for outfall 012 are similar in order of magnitude to 2009 DMR data (Warren, 2011).	No change.
Conservation Chemical Company	Kansas City, MO	Inorganic Chemicals	PCB	All 2011 PCB concentrations are below the permit limitations.	No change.

Table 3-3. Summary of 2011 DMR Facility Data Quality Review

Facility	Location	Point Source Category	Pollutant(s) in Question	Review Findings	Action Taken/ Database Correction
Huber, J.M. Corporation	Havre de Grace, MD	Inorganic Chemicals	Sodium sulfate	All 2011 sodium sulfate quantities are below the permit limitations.	No change.
Kennecott Corporation-Smelter & Refinery	Magna, UT	Ore Mining and Dressing	Arsenic, cadmium, copper	EPA reviewed arsenic, cadmium, copper, and flow values for all outfalls. No outlier data identified.	No change.
Pogo Mine	Delta Junction, AK	Ore Mining and Dressing	Arsenic	March 2011 arsenic concentration is three orders of magnitude higher than the other reported concentrations for outfall 011.	Divided March 2011 arsenic concentration by 1,000 for outfall 001.
Mobile Pulley and Machine Works	Mobile, AL	Ferroalloy Manufacturing	All pollutants	March 2011 flows for outfalls 001, 002, and 004 are three to four orders of magnitude higher than other months' flows.	Divided March 2011 flows for all outfalls 001, 002, and 004 by 1,000.
Wise Alloys, LLC—Alloys Plant	Muscle Shoals, AL	Aluminum Forming	Aluminum	2011 aluminum concentrations and flow rates for outfall 004 are high. State provided copies of the DMRs for outfall 004 (Pinson, 2013).	Updated 2011 aluminum concentrations and flow to match the state-provided DMRs for outfall 004.

3.3.2 Data Quality Review and Corrections to the 2011 TRI Data

To evaluate completeness, comparability, accuracy, and reasonableness of the 2011 TRI data, EPA performed the following checks:

Completeness. EPA compared counts of 2011 TRI reporting facilities in the Loading Tool to counts in *TRIReleases2009, TRIReleases2008, TRIReleases2007, TRIReleases2005, TRIReleases2004, TRIReleases2003, TRIReleases2002, and TRIReleases2000* to evaluate the completeness of the 2011 TRI data in the Loading Tool, as shown in Table 3-4. Additionally, EPA compared the counts of the number of facilities reporting 2011 TRI discharges, per NAICS code grouping, to the number of facilities reporting 2009 discharges. This comparison showed that for 72 percent of the NAICS code groupings, the number of facilities reporting wastewater discharges changed by less than 25 percent from 2009 to 2011. EPA also determined that most NAICS codes exhibiting a large percentage change did so because only a few facilities in these NAICS codes reported discharges (e.g., a change from one facility to three facilities is equivalent to a 200 percent increase).

Because the number of facilities reporting is similar between 2009 and 2011, EPA determined that the 2011 TRI dataset contained in the Loading Tool was complete for the purpose of its use in the 2013 Annual Review.

Table 3-4. Number of Facilities with Data in TRI for Reporting Years 2002 Through 2011

Reporting Year	Total Number of Facilities Reporting to TRI	Number of Facilities Reporting Discharges to TRI
2002	24,379	8,291
2003	23,811	8,051
2004	23,675	7,930
2005	23,461	7,837
2006	22,880	7,506
2007	21,965	6,572
2008	21,694	6,891
2009	20,797	7,012
2011	18,391	6,855

Comparability. EPA compared the 2011 TRI data from the Loading Tool to *TRIReleases2009* and previous years' discharges to identify annual pollutant loadings that differed more than the year-to-year variation of other chemicals and facilities. EPA used this comparison to determine if corrections were appropriate for facility discharges with the highest TWPE. If the comparison was unavailable (e.g., the pollutant was not previously reported), EPA contacted the facility. For a summary of the facility-specific reviews, see Table 3-5. EPA incorporated all of the data corrections identified through this review into the Loading Tool before calculating the final point source category rankings.

Accuracy and Reasonableness. EPA reviewed facility and pollutant discharges that had the greatest impact on total category loads and rankings in terms of TWPE discharged. For the identified facilities, EPA used the following steps:

1. Reviewed database corrections from previous TRAs to determine whether corrections made during previous reviews should apply to the 2011 TRI discharges.

2. Reviewed discharges reported to TRI for other reporting years (i.e., 2000, 2002, 2003, 2004, 2005, 2007, 2008, and 2009) and compared them to discharges reported to TRI for reporting year 2011 to identify trends in the discharges.

3. Reviewed 2011 TRI NAICS code information to determine if the facility was assigned to the point source category that best applied to the majority of its discharges, or identified pollutant-level point source category assignments where facilities have operations subject to more than one point source category.

4. Reviewed 2011 DMR data, if available, and hand-calculated annual pollutant loads to compare to discharges reported to TRI for reporting year 2011.

5. Verified that the Loading Tool excluded pollutants that should not have an associated pollutant load (e.g., yellow or white phosphorus). See Section 3.4.2 in EPA’s 2011 Annual Review Report (U.S. EPA, 2012b).

6. Contacted the facility to verify whether the pollutant discharges are reported correctly.

Table 3-5 presents EPA’s detailed facility review and corrections made to the 2011 TRI data. In addition to this review, EPA also reviewed historical data changes identified during previous TRAs to determine if they are still applicable to the 2011 TRI data. Table C-2 in Appendix C of this report lists all corrections EPA made to the 2011 TRI data before generating the Final 2013 Point Source Category Rankings.

Table 3-5. Summary of 2011 TRI Facility Review

Facility	Location	Point Source Category	Chemical(s) in Question	Review Findings	Action Taken/ Database Correction
S. D. Warren Co.	Skowhegan, ME	Pulp, Paper, and Paperboard	Dioxin and dioxin-like compounds	Facility contact provided corrected 2011 dioxin distribution (Schwartz and Wiegand, 2013).	Revised dioxin distribution.
Mountain State Carbon LLC	Follansbee, WV	Iron and Steel	PACs	During the 2011 Annual Review, EPA contacted the facility to confirm the PAC discharge. The facility contact provided PAC sampling data, which provide a distribution for the PAC compounds to create a facility-specific TWF (Smith, 2011). The 2011 PAC load is similar in order of magnitude to the 2009 PAC load; therefore, EPA will apply the same change to the facility-specific TWF.	Revised PACs annual load (lb/y) from 330 to 169. Calculated TWPE using facility-specific TWF.
Carolina Pole Leland	Leland, NC	Timber Products Processing	Dioxin and dioxin-like compounds	Facility contact provided 2010 dioxin sampling data, which were used in combination with 2011 rainfall data to calculate the 2011 TRI load (Rouse, 2013). The facility-provided dioxin distribution does not match the 2011 TRI dioxin distribution.	Revised dioxin distribution to match facility-provided sampling data.
Domtar Paper Co.	Bennettsville, SC	Pulp, Paper, and Paperboard	Dioxin and dioxin-like compounds	Based on the non-detect results provided as part of the 2011 Annual Review, the dioxin data can be zeroed for 2011 (U.S. EPA, 2012b).	Zeroed dioxin load.
Abibow US Inc. — Calhoun Operations	Calhoun, TN	Pulp, Paper, and Paperboard	Dioxin and dioxin-like compounds	Based on the non-detect results provided as part of the 2011 Annual Review, the dioxin data can be zeroed for 2011 (U.S. EPA, 2012b).	Zeroed dioxin load.

Table 3-5. Summary of 2011 TRI Facility Review

Facility	Location	Point Source Category	Chemical(s) in Question	Review Findings	Action Taken/ Database Correction
Graftech International Holdings Inc.	Columbia, TN	Carbon Black Manufacturing	PACs	During the 2010 Annual Review, EPA contacted the facility to confirm the PAC discharge. The facility contact provided PAC sampling data, which provide a distribution for the PAC compounds to create a facility-specific TWF (Aslinger, 2010). The 2011 PAC load is similar in order of magnitude to the 2008 PAC load; therefore, EPA will apply the same change to the facility-specific TWF.	Revised PACs annual load (lb/y) from 371 to 134. Calculated TWPE using the facility-specific TWF.
St. Paul Park Refining Co., LLC	Saint Paul Park, MN	Petroleum Refining	Dioxin and dioxin-like compounds	Facility contact confirmed that an error was identified in their 2011 dioxin load calculations (Owen, 2013).	Revised dioxin distribution and load.
Columbian Chemicals Co.	Centerville, LA	Carbon Black Manufacturing	PACs	Facility confirmed all 2011 PAC discharges are non-detect (Reasoner, 2013).	Zeroed PAC load.
Sasol North America Inc. Lake Charles Chemical Complex	Westlake, LA	Organic Chemicals, Plastics, and Synthetic Fibers	Dioxin and dioxin-like compounds	Facility contact provided dioxin compound sampling data. Facility contact stated that distribution and load were calculated using half the detection limit for values that were non-detect (Hookanson, 2013). These data matched the dioxin data requested during the 2011 Annual Review.	Revised dioxin load (lb/y) from 0.0009 to 0.0006, and revised the dioxin distribution.
Exxonmobil Chemical Baton Rouge Chemical Plant	Baton Rouge, LA	Organic Chemicals, Plastics, and Synthetic Fibers	PACs	Facility contact confirmed 2011 TRI PAC discharges were estimated from monthly sampling results and that all results are non-detect (Labat, 2013).	Zeroed PAC load.

Table 3-5. Summary of 2011 TRI Facility Review

Facility	Location	Point Source Category	Chemical(s) in Question	Review Findings	Action Taken/ Database Correction
Hovensa, LLC.	Christiansted, VI	Petroleum Refining	Dioxin and dioxin-like compounds	The facility was contacted as part of the 2011 Annual Review. The contact stated that the dioxin discharges are estimated using literature values associated with dioxin formation from reformer catalyst regeneration (Vernon, 2011). Hovensa did not analyze its wastewater for dioxin or furans; therefore, EPA is not certain dioxins and furans are actually present in the wastewater at concentrations above the Method 1613B Minimum Level. As a result, EPA concluded that although Hovensa's estimate of releases follows TRI program guidance, it may not represent actual wastewater discharges (U.S. EPA, 2014).	No action.
Exxonmobil Refining & Supply Baton Rouge Refinery	Baton Rouge, LA	Petroleum Refining	Mercury and mercury compounds	The facility actually detected 0.022 ppm of mercury and mercury compounds because LDEQ published new lower MQLs for metals as part of the water quality standards (historically the mercury discharges were non-detect because LDEQ had higher MQLs (Labat, 2013).	No action.
Boise White Paper, LLC	Wallula, WA	Pulp, Paper, and Paperboard	Dioxin and dioxin-like compounds	The facility confirmed the 2011 dioxin distribution and total grams and stated that the same calculation process as previous years was used. The reason some congeners were detected in 2009 and not in 2011 was that in 2009 one-half the detection limit was used for the congeners that were reported by the testing lab as non-detect. Since 2009, these values have been reported as zero (Schwartz and Wiegand, 2013). No data corrections.	No action.

Table 3-5. Summary of 2011 TRI Facility Review

Facility	Location	Point Source Category	Chemical(s) in Question	Review Findings	Action Taken/ Database Correction
Eastman Chemical Co., Tennessee Operations	Kingsport, TN	Pesticide Chemicals	Arsenic and arsenic compounds, mercury and mercury compounds, hydroquinone	The facility contact confirmed that the facility uses coal boilers and gasification units onsite. The mercury and arsenic compounds are constituents in the coal and must be reported for TRI, however, sampling indicated that all mercury and arsenic discharges were non-detect. Per EPA direction, mercury and arsenic discharges will be removed to new subcategory under steam and the concentrations will be zeroed. The facility confirmed hydroquinone discharge and stated that the data are modeled based on influent manufacturing data. No data corrections to hydroquinone discharges (Smith, 2013).	Mercury and arsenic discharges moved to a new subcategory under steam; discharges zeroed.

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4. FINAL 2013 ANNUAL REVIEW TOXICITY RANKING ANALYSIS METHODOLOGY AND RESULTS

This section presents the methodology and results for the 2013 Toxicity Rankings Analysis (TRA) along with EPA's review of facilities not reporting a Standard Industrial Classification (SIC) code in the 2011 discharge monitoring report (DMR) data.

4.1 Methodology for Generating the Final 2013 Point Source Category Rankings

After incorporating the corrections discussed in Section 3.3, EPA downloaded the DMR and Toxics Release Inventory (TRI) data from the Loading Tool to a set of databases used for the 2013 Annual Review: *DMRLTOutput2011_v1* and *TRILTOutput2011_v1*. The databases are designed to preserve the integrity of the data and subsequent analyses supporting the 2013 Annual Review: they are static, while the Loading Tool is based on a dynamic dataset that can change over time. (For example, evolving reporting requirements may affect the population of facilities reporting to the Permit Compliance System (PCS) or the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES) and facilities may report data corrections as they are identified.) EPA used the static data in the databases to generate the combined Final 2013 Point Source Category Rankings (see Section 4.2) and inform its preliminary category reviews (see Section 5).

See Appendix D of this report for the DMR and TRI category rankings by toxic-weighted pound equivalents (TWPE). Specifically, Tables D-1 and D-2 in Appendix D present the category rankings by TWPE from the *TRIOutput2011_v1* and *DMRLTOutput2011_v1* databases, respectively. These tables reflect all the corrections described in Section 3.3. Tables D-3 and D-4 in Appendix D present the six-digit North American Industry Classification System (NAICS) code rankings by TWPE from *TRIOutput2011_v1* and the four-digit SIC code rankings by TWPE from *DMRLTOutput2011_v1*, respectively. Tables D-5 and D-6 in Appendix D present the chemical rankings by TWPE from *TRIOutput2011_v1* and *DMRLTOutput2011_v1*, respectively.

For the 2013 TRA, EPA consolidated the 2011 DMR and TRI point source category rankings into one dataset using the following steps:

- EPA combined the two lists of point source categories by adding each category's *DMRLTOutput2011_v1* TWPE and *TRILTOutput2011_v1* TWPE.[13]
- EPA ranked the point source categories based on the total *DMRLTOutput2011_v1* and *TRILTOutput2011_v1* TWPE.

Additionally for the 2013 TRA, EPA eliminated from further consideration the results for the following:

- Discharges from industrial categories for which EPA recently considered developing or revising effluent limitations guidelines and standards (ELGs), or for

[13] Combining DMR and TRI loads may result in "double-counting" of chemical discharges if a facility reported to both PCS/ICIS-NPDES and TRI, and "single-counting" of chemicals reported in only one of the data sources. Further, the combined TWPE do not count chemicals that may be discharged but are not report to PSC/ICIS-NPDES or TRI.

which EPA has recently promulgated or revised ELGs (within the past seven years).

- Discharges from facilities that require a NPDES permit but do not fall into an existing or new point source category or subcategory (e.g., Superfund sites).

Sections 4.1.1 and 4.1.2 discuss the rationale for these decisions. The final combined database rankings represent the results of the 2013 TRA and are presented in Section 4.2.

4.1.1 Categories for Which EPA Has Recently Considered Developing or Revising ELGs or Has Recently Promulgated or Revised ELGs

EPA did not consider industrial categories for which it has recently considered developing or revising ELGs, because it has thoroughly reviewed these categories separately from the annual review process. These categories include the Organic Chemicals, Pesticides, and Synthetic Fibers (40 CFR 414) and Inorganic Chemicals Manufacturing (40 CFR 415) point source categories for facilities that produce chlorine and chlorinated hydrocarbons, as well as the coalbed methane extraction industry. See Section 5 of EPA's Final 2012 and Preliminary 2014 Plan (U.S. EPA, 2014) for details on EPA's determinations related to these categories.

Similarly, EPA's 2013 Annual Review excluded point source categories for which ELGs were recently established or revised but are not yet fully implemented, as well as categories that were recently reviewed in a rulemaking context, but for which EPA decided to withdraw the proposal or choose "no action." In general, EPA removed an industrial point source category from further consideration during a review cycle if it had established, revised, or reviewed the category's ELGs within seven years prior to the Annual Review. This seven-year period allows time for the ELGs to be incorporated into NPDES permits. Table 4-1 lists the categories EPA excluded from the 2013 Annual Review due to this seven-year period.

Table 4-1. Point Source Categories That Have Undergone Recent Rulemaking or Review

40 CFR Part	Point Source Category	Date of Rulemaking
450	Construction and Development	December 1, 2009
122 and 412	Concentrated Animal Feeding Operations (CAFOs)	November 20, 2008
449	Airport Deicing	May 16, 2012

EPA also did not consider industrial categories for which it is currently engaged in a rulemaking process. These include steam electric power generation, dental amalgam, and oil and gas extraction, specifically shale gas extraction. See Section 5.2 of the Final 2012 and Preliminary 2014 Plans (U.S. EPA, 2014) for details on the rulemaking status for these categories.

4.1.2 Discharges Not Categorizable

EPA identified discharges that are not categorizable into existing or new point source categories or subcategories. In particular, EPA reviewed high-TWPE discharges from a Superfund site (Auchterlonie, 2009). Direct discharges from Superfund sites, whether made onsite or offsite, are subject to NPDES permitting requirements (U.S. EPA, 1988a, 1988b). For the reasons discussed below, EPA determined that these discharges do not fall into a single point source category and excluded these TWPE from the point source category rankings.

EPA determined that discharges from Superfund sites are too varied to be categorized into a single point source category. In particular, they vary by:

- Contaminants (e.g., metals, pesticides, dioxin).
- Treatment technologies (e.g., air stripping, granular activated carbon, chemical/ultraviolet oxidation, aerobic biological reactors, chemical precipitation).
- Types of facilities causing groundwater contamination (e.g., wood treatment facilities, metal finishing and electroplating facilities, drum recycling facilities, mine sites, mineral processing facilities, radium processing facilities).

Moreover, the duration and volume of these direct discharges vary significantly due to differences in aquifer characteristics and the magnitude, fate, and transport of contaminants in aquifers and vadose zones. Currently at Superfund sites, permit writers determine technology-based effluent limits using their best professional judgment. EPA selects the remedial technology and derives numerical effluent discharge limits. The permit must also contain more stringent effluent limitations when required to comply with state water quality standards. EPA finds that the current site-specific best professional judgment approach is workable and flexible within the context of a Superfund cleanup.

4.2 Results of the 2013 Toxicity Rankings Analysis

Table 4-2 presents the combined *DMRLTOutput2011_v1* and *TRILTOutput2011_v1* rankings. These are the Final 2013 Point Source Category Rankings that support EPA's 2013 Annual Review, accounting for all corrections to the data discussed in Section 3.3 and removal of any categories and discharges discussed in Section 4.1.

Table 4-2. Final 2013 Combined Point Source Category Rankings

40 CFR Part	Point Source Category	*TRILTOutput2011_v1* TWPE	*DMRLTOutput2011_v1* TWPE	Total TWPE	Cumulative Percentage of Total TWPE	Rank
414	Organic Chemicals, Plastics, and Synthetic Fibers	148,000	1,540,000	1,690,000	13.1%	1
430	Pulp, Paper, and Paperboard	651,000	1,030,000	1,690,000	26.3%	2
419	Petroleum Refining	681,000	752,000	1,430,000	37.4%	3
NA	Drinking Water Treatment	1,640	1,380,000	1,390,000	48.2%	4
440	Ore Mining and Dressing	1,230,000	110,000	1,340,000	58.6%	5
420	Iron and Steel Manufacturing	82,900	1,170,000	1,250,000	68.4%	6
418	Fertilizer Manufacturing	6,670	599,000	606,000	73.1%	7
415	Inorganic Chemicals Manufacturing	327,000	142,000	469,000	76.7%	8
421	Nonferrous Metals Manufacturing	42,900	383,000	426,000	80%	9
455	Pesticide Chemicals	374,000	19,300	393,000	83.1%	10
409	Sugar Processing	430	373,000	374,000	86%	11
433	Metal Finishing	51,700	265,000	317,000	88.5%	12
451	Concentrated Aquatic Animal Production	NA	292,000	292,000	90.7%	13
434	Coal Mining	564	189,000	189,000	92.2%	14
432	Meat and Poultry Products	39,100	119,000	158,000	93.4%	15
429	Timber Products Processing	32,300	98,600	131,000	94.5%	16
435	Oil and Gas Extraction	NA	106,000	106,000	95.3%	17
463	Plastics Molding and Forming	69,200	26,700	95,900	96%	18
NA	Miscellaneous Foods and Beverages	4,900	57,400	62,300	96.5%	19
445	Landfills	42,900	19,300	62,200	97%	20
417	Soap and Detergent Manufacturing	2,370	47,100	49,500	97.4%	21
424	Ferroalloy Manufacturing	8,990	27,300	36,300	97.7%	22
436	Mineral Mining and Processing	2,950	31,200	34,100	97.9%	23
458	Carbon Black Manufacturing	27,900	0.201	27,900	98.2%	24

Table 4-2. Final 2013 Combined Point Source Category Rankings

40 CFR Part	Point Source Category	*TRILTOutput2011_v1* TWPE	*DMRLTOutput2011_v1* TWPE	Total TWPE	Cumulative Percentage of Total TWPE	Rank
464	Metal Molding and Casting (Foundries)	9,670	16,300	26,000	98.4%	25
410	Textile Mills	1,070	22,300	23,400	98.5%	26
471	Nonferrous Metals Forming and Metal Powders	17,900	3,440	21,300	98.7%	27
428	Rubber Manufacturing	10,200	7,320	17,500	98.8%	28
438	Metal Products and Machinery	7,950	7,670	15,600	99%	29
422	Phosphate Manufacturing	193	13,600	13,800	99.1%	30
406	Grain Mills	10,500	2,810	13,300	99.2%	31
457	Explosives Manufacturing	17.4	11,800	11,800	99.3%	32
469	Electrical and Electronic Components	3,580	8,180	11,800	99.4%	33
437	Centralized Waste Treatment	2,350	7,860	10,200	99.4%	34
460	Hospital	NA	9,420	9,420	99.5%	35
468	Copper Forming	6,180	2,610	8,790	99.6%	36
467	Aluminum Forming	1,300	6,960	8,270	99.6%	37
439	Pharmaceutical Manufacturing	2,350	4,520	6,870	99.7%	38
411	Cement Manufacturing	652	5,960	6,620	99.7%	39
407	Canned and Preserved Fruits and Vegetables Processing	4,420	1,060	5,480	99.8%	40
405	Dairy Products Processing	3,770	593	4,360	99.8%	41
413	Electroplating	4,100	NA	4,100	99.9%	42
466	Porcelain Enameling	27.8	2,730	2,760	99.9%	43
444	Waste Combustors	88.2	2,650	2,740	99.9%	44
NA	Printing and Publishing	388	1,890	2,280	99.9%	45
425	Leather Tanning and Finishing	1,900	8.2	1,910	99.9%	46
426	Glass Manufacturing	246	1,560	1,800	99.9%	47
442	Transportation Equipment Cleaning	0.013	1,700	1,700	100%	48

Table 4-2. Final 2013 Combined Point Source Category Rankings

40 CFR Part	Point Source Category	*TRILTOutput2011_v1* TWPE	*DMRLTOutput2011_v1* TWPE	Total TWPE	Cumulative Percentage of Total TWPE	Rank
443	Paving and Roofing Materials (Tars and Asphalt)	1,060	581	1,640	100%	49
461	Battery Manufacturing	870	298	1,170	100%	50
NA	Independent and Stand Alone Labs	4.47	756	761	100%	51
408	Canned and Preserved Seafood Processing	74.2	686	761	100%	52
427	Asbestos Manufacturing	NA	518	518	100%	53
454	Gum and Wood Chemicals Manufacturing	33.6	360	394	100%	54
465	Coil Coating	75	250	325	100%	55
446	Paint Formulating	86.5	3.05	89.5	100%	56
NA	Food Service Establishments	NA	45.6	45.6	100%	57
NA	Industrial Laundries	NA	12.6	12.6	100%	58
NA	Tobacco Products	12.5	NA	12.5	100%	59
447	Ink Formulating	3.61	2.22	5.84	100%	60
NA	Photo Processing	NA	0.0628	0.0628	100%	61
459	Photographic	NA	0.0628	0.0628	100%	62
Total		**3,920,000**	**8,930,000**	**12,900,000**		

Sources: *DMRLTOutput2011_v1 and TRILTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.

4.3 EPA's Review of SIC Code Classifications for Previously Unclassified Facilities

During the 2013 Annual Review, EPA identified 437 facilities that did not report an associated SIC code in the 2011 DMR data, corresponding to 6,200,000 TWPE. As a result, the TWPE from these facilities was not assigned to and considered as part of the discharge from the relevant industrial point source categories. For the 2013 Annual Review, EPA reviewed 10 facilities that made up the top 99 percent of the TWPE associated with unclassified facilities to assign applicable SIC codes/point source categories. Table 4-3 presents EPA's review of these top facilities. EPA plans to incorporate these SIC code changes and data corrections into future annual reviews.

4.4 References for the Final 2013 Annual Review TRA Methodology and Results

1. Auchterlonie, Steve. 2009. Notes from Telephone Conversation between Steve Auchterlonie, Front St. Remedial Action, and Chris Krejci, Eastern Research Group, Inc. "RE: Verification of magnitude and basis of estimate for dioxin and dioxin-like compounds discharges in PCS." (March 13). EPA-HQ-OW-2008-0517-0076.

2. Lopez, Victor. 2013. Telephone and Email Communication Between Victor Lopez, California Water Resources Control Board, and Kimberly Bartell, Eastern Research Group, Inc., Re: DMR Data and Permit Information for CA8000409. (July 12). EPA-HQ-OW-2014-0170. DCN 07958.

3. Patridge, Michael. 2013. Telephone and Email Communication Between Michael Patridge, Illinois EPA, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2011 DMR Data. (November 25). EPA-HQ-OW-2014-0170. DCN 07959.

4. U.S. EPA. 1988a. CERCLA Compliance with Other Laws Manual: Interim Final. EPA-540-G-89-006. OSWER Publication 9234.1-01. Washington, DC. (August). Available online at: www.epa.gov/superfund/resources/remedy/pdf/540g-89006-s.pdf.

5. U.S. EPA. 1988b. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites. OSWER Directive 9283.1-2. EPA-540-G-88-003. (December). Available online at: www.epa.gov/superfund/resources/remedy/pdf/540g-89006-s.pdf.

6. U.S. EPA. 2014. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans.* Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170. DCN 07756.

Table 4-3. Summary of EPA's Review of SIC Code Classifications for the Top Previously Unclassified Facilities

Facility	Location	TWPE	Review Findings				Action Taken/Database Correction
			Assigned SIC Code	SIC Description	Assigned PSC Code	PSC Description	
Latham Water Treatment Plant	Latham, IL	4,110,000	4951	Water Supply	501	Drinking Water Treatment	EPA contacted Illinois EPA and determined that flow values and concentrations were incorrect for total residual chlorine and iron discharges (Patridge, 2013). Incorporating the corrections, the facility TWPE is reduced to 0.047.
Gosnold Arms Inc.	New Harbor, ME	667,000	7011	Hotels and Motels	NA	NA	High TWPE results from discharges of chlorine. EPA identified a flow error for outfall 001. Dividing the flows by 1,000,000 reduces the facility TWPE to 0.667.
North End Association	Southport, ME	517,000	8811	Private Household	NA	NA	High TWPE results from discharges of chlorine. EPA identified a flow error for outfall 001. Dividing flows by 1,000,000 reduces the facility TWPE to 0.517.
Regional Water Recycling Plant No. 5	Chino, CA	323,000	4952	Sewerage System	NA	NA	High TWPE results from discharges of copper and aluminum. The California Water Board confirmed that the units for copper and aluminum were incorrect and should be divided by 1,000 (Lopez, 2013). Incorporating this change the facility TWPE drops to 2,000.
East Capitol Island Partnership	Southport, ME	279,000	6541	Operators of Dwellings Other Than Apartments	NA	NA	High TWPE due to discharges of chlorine. EPA identified a flow error for outfall 001. Dividing flows by 1,000,000 reduces the facility TWPE to 0.279.
Jasper Wyman & Sons	Cherryfield, ME	138,000	2033	Canned, Frozen, and Preserved Fruits, and Food Specialties	407	Canned and Preserved Fruits and Vegetables Processing	High TWPE due to discharges of chlorine. EPA identified a flow error for outfall 001. Dividing flows by 1,000,000 reduces the facility TWPE to 0.138.
Cullman Filter Plant	Cullman, AL	41,800	4941	Water Supply	501	Drinking Water Treatment	High TWPE due to discharges of aluminum and chlorine. EPA identified a flow error for outfall 001. Dividing flow values by 100 reduces the facility TWPE to 445.

Table 4-3. Summary of EPA's Review of SIC Code Classifications for the Top Previously Unclassified Facilities

Facility	Location	TWPE	Review Findings				Action Taken/Database Correction
			Assigned SIC Code	SIC Description	Assigned PSC Code	PSC Description	
North Marshall Water Treatment Plant	Grant, AL	38,400	4941	Water Supply	501	Drinking Water Treatment	High TWPE due to discharges of aluminum and chlorine. EPA identified a flow error for outfall 001. Dividing the flow values by 100 reduces the facility TWPE to 413.
Atlantic Blanket Company Inc.	Northport, ME	24,600	2392	House Furnishings, Exc Curtains	NA	NA	High TWPE due to copper and chromium discharges. EPA identified a flow error for outfall 001. Dividing the flow values by 1,000,000 reduces the facility TWPE to 0.0248.
St. Linden Terminal LLC	Linden, NJ	15,000	5171	Petroleum Bulk Station and Terminal	419	Petroleum Refining	High TWPE due to copper and zinc discharges. EPA identified a flow error for outfall 001. Dividing the flow values by 1,000,000 reduces the facility TWPE to 0.123.

5. EPA'S 2013 PRELIMINARY CATEGORY REVIEWS

Based on its toxicity rankings analysis, EPA was able to prioritize for further review (see Section 2.2.2) those industrial categories whose pollutant discharges potentially pose the greatest hazards to human health or the environment because of their toxicity. To identify these industrial categories, EPA calculated the industrial categories cumulative percent of the total toxic-weighted pound equivalents (TWPE). As shown in Table 4-2, EPA identified and focused its review on the 17 industrial categories that collectively discharge over 95 percent of the total TWPE.

5.1 Prioritization of Categories for Preliminary Category Review

Based on its knowledge of the annual review process; data from the Permit Compliance System (PCS), the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES), and the Toxics Release Inventory (TRI); and historical data changes, EPA determined that seven of the 17 categories did not warrant a detailed preliminary category review as part of the 2013 Annual Review. For these seven categories, many of which have been reviewed in detail in prior annual reviews, EPA found that the majority of the TWPE resulted from an easily identifiable error (e.g., incorrect reporting units) associated with one or two facilities. For TWPE not associated with data entry errors, EPA did not identify any new information to alter the findings made during previous annual reviews. These industrial categories, and the reasons for excluding them from further preliminary review, are briefly discussed below.

For the remaining 10 of the 17 industrial categories that collectively discharge over 95 percent of the total TWPE, EPA did not initially identify obvious data entry errors and/or determined that the TWPE was attributed to multiple pollutants and facilities. Therefore, EPA completed a detailed preliminary review for these categories to identify whether data corrections were necessary or whether the discharges are more appropriately regulated by facility-specific permitting action, or may warrant revisions to effluent limitations guidelines and standards. The findings from EPA's preliminary category reviews are discussed in the following subsections of this report. The 10 industrial categories identified for detailed preliminary category reviews are listed below and discussed in Sections 5.2 through 5.11:

- Coal Mining (40 CFR Part 434);
- Drinking Water Treatment (potential new category);
- Inorganic Chemicals Manufacturing (40 CFR Part 415);
- Iron and Steel Manufacturing (40 CFR Part 420);
- Metal Finishing (40 CFR Part 433);
- Nonferrous Metals Manufacturing (40 CFR Part 421);
- Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR Part 414);
- Petroleum Refining (40 CFR Part 419);
- Pulp, Paper, and Paperboard (40 CFR Part 430); and
- Timber Products Processing (40 CFR Part 429).

5.1.1 Concentrated Aquatic Animal Production (40 CFR Part 451)

The Concentrated Aquatic Animal Production (CAAP) Category total TWPE is composed entirely of 2011 discharge monitoring report (DMR) discharges. The 2011 DMR top pollutant is copper. EPA identified one facility, Clear Springs Food Inc. in Buhl, ID, which accounts for over 99 percent of the 2011 DMR copper TWPE for the CAAP Category. As part of the 2013 Annual Review, EPA contacted the state of Idaho to confirm Clear Spring Foods Inc.'s copper discharges. The DMRs that the state provided confirmed that the copper concentrations were incorrect and that actual discharges did not occur (Gebhardt, 2013). Zeroing the copper discharges for the Clear Spring Foods Inc. facility reduces the CAAP Category's 2011 copper TWPE from 289,000 to 2,740 and the total 2011 DMR TWPE from 292,000 to 5,130. The category is no longer a priority for the 2013 Annual Review.

5.1.2 Meat and Poultry Products (40 CFR Part 432)

For the Meat and Poultry Products (Meat and Poultry) Category, the 2011 DMR TWPE accounts for 75 percent of the combined DMR and TRI TWPE. As a result, EPA focused on 2011 DMR data. The top 2011 DMR pollutant is lead. EPA identified one facility, Equity Group Eufaula Div LLC in Eufaula, AL, that accounts for over 99 percent of the 2011 DMR lead TWPE for the Meat and Poultry Category. As part of the 2013 Annual Review, EPA contacted this facility to confirm its lead discharges. The facility contact indicated that a reporting error had been made and all metal concentrations should be divided by 1,000 (Cline, 2013). Correcting this error reduces the Meat and Poultry Category's total 2011 DMR TWPE from 119,000 to 13,700. The category is no longer a priority for the 2013 Annual Review.

5.1.3 Oil and Gas Extraction (40 CFR Part 435)

For the Oil and Gas Extraction (Oil and Gas) Category, the 2011 DMR TWPE accounts for 100 percent of the combined DMR and TRI TWPE. As a result, EPA focused on 2011 DMR data. EPA determined that four facilities account for 93 percent of the total 2011 DMR TWPE. EPA reviewed these facilities and determined that they are offshore facilities in the Gulf of Mexico, regulated by 40 CFR Part 435, Subpart A (Offshore Subcategory). Discharges from these facilities are subject to a general permit (GMG290000), issued by EPA Region 6. Through facility review, EPA determined that the top pollutants, mercury in barite, in dry weight, and cadmium in barite, also in dry weight, should be excluded from the 2011 DMR pollutant loading calculations because they are not associated with wastewater discharges. These pollutants are associated with solid barite stock used to generate drilling mud (40 CFR Part 435 §435.13) at these facilities. The facilities are required to test the solid barite stock to determine if they can discharge drilling fluids. Drilling fluids to which barite has been added (if such barite contains mercury in excess of 1.0 milligrams per kilogram dry weight, or cadmium in excess of 3.0 milligrams per kilogram dry weight), have a zero discharge permit requirement. Removing these pollutant discharges reduced the Oil and Gas Category's total 2011 DMR TWPE from 106,000 to 8,130. The category is no longer a priority for the 2013 Annual Review.

5.1.4 Ore Mining and Dressing (40 CFR Part 440)

For the Ore Mining Category, the 2011 TRI TWPE accounts for 92 percent of the combined DMR and TRI TWPE. As a result, EPA focused on TRI data. The top pollutants in the 2011 TRI database are arsenic and arsenic compounds and copper and copper compounds. One facility, Jerritt Canyon Mine in Elko, NV, accounts for more than 99 percent of the arsenic and arsenic compound and copper and copper compound discharges in the 2011 TRI database. As part of the 2013 Annual Review, EPA contacted Jerritt Canyon Mine to confirm the arsenic and arsenic compound and copper and copper compound discharges. The facility contact indicated that a reporting error had been made: all the metal concentrations were supposed to be in parts per million but had not been divided by 1,000,000, so they were a factor of six higher than they should have been (Barta, 2013). Correcting this error reduces the Ore Mining Category's 2011 total TRI TWPE from 1,230,000 to 73,000. The category is no longer a priority for the 2013 Annual Review.

5.1.5 Pesticide Chemicals (40 CFR Part 455)

For the Pesticide Chemicals Category, the 2011 TRI TWPE accounts for 95 percent of the combined DMR and TRI TWPE. As a result, EPA focused on TRI data. The top pollutants in the 2011 TRI database are toxaphene and chlordane. EPA identified one facility, Weylchem U.S. Inc. (Weylchem) in Elgin, SC, that accounts for 100 percent of the 2011 TRI toxaphene and chlordane TWPE for the Pesticide Chemicals Category. Weylchem's heptachlor discharges were reviewed in the 2011 Annual Review Report. As part of the 2011 Annual Review, EPA compared Weylchem's 2009 heptachlor TRI discharges to 2009 heptachlor DMR discharges and determined that 2009 heptachlor DMR discharges were non-detect. Therefore, EPA revised the heptachlor TRI load to zero (see Table 3-3 in the 2011 Annual Review Report, U.S. EPA, 2012). As part of the 2013 Annual Review, EPA followed similar steps for Weylchem's toxaphene and chlordane discharges. EPA compared Weylchem's 2011 toxaphene and chlordane TRI discharges to 2011 toxaphene and chlordane DMR discharges and determined that 2011 toxaphene and chlordane DMR discharges were non-detect. Therefore, EPA revised the toxaphene and chlordane TRI load to zero. Incorporating these corrections decreases the Pesticide Chemicals Category's 2011 TRI TWPE from 374,000 to 19,300. The category is no longer a priority for the 2013 Annual Review.

5.1.6 Fertilizer Manufacturing (40 CFR Part 418)

The Fertilizer Manufacturing Category total TWPE is composed almost entirely of DMR discharges and the top 2011 DMR pollutant is fluoride. EPA identified one facility, Mosaic Fertilizer LLC, in Uncle Sam, LA, which accounts for over 98 percent of the 2011 DMR fluoride TWPE for the Fertilizer Manufacturing Category. Mosaic Fertilizer LLC is a phosphate fertilizer manufacturer. Phosphate fertilizer manufacturers are subject to 40 CFR Part 418 Subpart A, "Phosphate Subcategory." The facility was reviewed as part of the 2010 and 2011 Annual Reviews. During those reviews, EPA determined that, in accordance with 40 CFR Part 418, the facility is exempt from Subpart A and that permit limits are based on facility-specific permitting (U.S. EPA 2011, 2012). Further, fluoride discharges for the facility have decreased from discharge years 2009 to 2011 (816,000 TWPE in 2009, 534,000 TWPE in 2011). Therefore, EPA makes similar conclusions as previous annual reviews: Mosaic Fertilizer LLC does not represent the Fertilizer Category as a whole because it is exempt from Part 418 (see 52 FR 28428, July 29, 1987). The category is no longer a priority for the 2013 Annual Review.

5.1.7 Sugar Processing (40 CFR Part 409)

The Sugar Processing Category total TWPE is composed entirely of DMR discharges and the top 2011 DMR pollutant is methylmercury. EPA identified one facility, C&H Sugar Co. Inc.

in Crockett, CA, that accounts for 100 percent of the 2011 DMR methylmercury TWPE for the Sugar Processing Category. As part of the 2013 Annual Review, EPA contacted the state of California to confirm C&H Sugar Co.'s methylmercury discharges. The state indicated that the methylmercury concentrations were incorrect; 2011 concentrations were measured in units of micrograms per liter, not milligrams per liter as listed on the DMRs (Vasquez, 2013). EPA found a similar error with this facility during the 2011 review of the Sugar Processing Category and came to similar conclusions (U.S. EPA, 2012). Correcting this error reduces the Sugar Processing Category's 2011 methylmercury TWPE from 368,000 365 and the total 2011 DMR TWPE from 373,000 to 5,930. The category is no longer a priority for the 2013 Annual Review.

5.1.8 References for the Prioritization for Categories for Preliminary Category Review

1. Barta, John. 2013. Telephone Communication with John Barta, Jerritt Canyon Mine, and Julia Kolberg, Eastern Research Group, Inc. "Re: 2011 TRI Discharges." (December 11). EPA-HQ-OW-2014-0170. DCN 07962.

2. Cline, Randy. 2013. Telephone and Email Communication with Randy Cline, Equity Group Eufaula Div LLC, and Kimberly Bartell, Eastern Research Group, Inc. "Re: 2011 DMR Discharges." (December 13). EPA-HQ-OW-2014-0170. DCN 07960.

3. Gebhardt, Chris. 2013. Telephone and Email Communication with Chris Gebhardt, Idaho DEQ, and Julia Kolberg, Eastern Research Group, Inc. "Re: 2011 DMR Discharges." (December 13). EPA-HQ-OW-2014-0170. DCN 07961.

4. U.S. EPA. 2011. Technical Support Document for the 2010 Effluent Guidelines Program Plan. Washington, D.C. (October). EPA 820-R-10-021. EPA-HQ-OW-2008-0517. DCN 07320.

5. U.S. EPA. 2012. The *2011 Annual Effluent Guidelines Review Report.* Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.

6. Vasquez, Gil. 2013. Telephone and Email Communication with Gil Vasquez, State Water Resources Control Board of California, and Julia Kolberg, Eastern Research Group, Inc. "Re: 2011 DMR Discharges for C&H Sugar Co." (December 13). EPA-HQ-OW-2014-0170. DCN 07963.

5.2 Coal Mining (40 CFR Part 434)

EPA selected the Coal Mining Category for preliminary review because it continues to rank high, in terms of toxic-weighted pound equivalents (TWPE), in point source category rankings. EPA previously reviewed this industry in the Effluent Guidelines Program Plans from 2004 to 2006 and in 2011 (U.S. EPA, 2004, 2005, 2006, 2012). EPA also conducted a detailed study of the Coal Mining Category during the 2007 and 2008 Annual Reviews (U.S. EPA, 2008). This section summarizes the results of the 2013 Annual Review pertaining to the Coal Mining Category. EPA focused on discharges of iron, mercury, sulfate, and manganese because of their high TWPE relative to other pollutants in the Coal Mining Category. Iron and manganese, reviewed as part of the 2011 Annual Review, continue to be top pollutants of concern. For the 2013 Annual Review, available discharge data also showed significant contributions of mercury and sulfate to the Coal Mining Category TWPE.

5.2.1 Coal Mining Category Toxicity Rankings Analysis

Table 5-1 compares the toxicity rankings analysis (TRA) results for the Coal Mining Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review, as discussed in the Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans (U.S. EPA, 2014). As discussed in this section, EPA's review of the Coal Mining Category identified several data errors that affected the 2011 Discharge Monitoring Report (DMR) data and TWPE. The bottom row of Table 5-1 shows the corrected data resulting from this review.

Table 5-1. Coal Mining Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

<table>
<tr><th rowspan="2">Year of Discharge</th><th rowspan="2">Year of Review</th><th colspan="3">Coal Mining Category Facility Counts</th><th colspan="3">Coal Mining Category</th></tr>
<tr><th>Total TRI Facilities</th><th>Total DMR Major Facilities</th><th>Total DMR Minor Facilities[a]</th><th>TRI TWPE[b]</th><th>DMR TWPE[c]</th><th>Total TWPE</th></tr>
<tr><td>2009[d]</td><td>2011</td><td>24</td><td>8</td><td>158</td><td>1,010</td><td>25,600</td><td>26,600</td></tr>
<tr><td>2011</td><td>2013</td><td rowspan="2">17</td><td rowspan="2">13</td><td rowspan="2">199</td><td>564</td><td>189,000</td><td>190,000</td></tr>
<tr><td>2011[e]</td><td>2013</td><td>564</td><td>55,900</td><td>56,500</td></tr>
</table>

Source: 2011 Annual Review Report (for 2009[d] DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.
[e] 2011 data after corrections made during the 2013 Annual Review.

As shown in Table 5-1, the total TWPE (incorporating data corrections) increased from 2009 to 2011. During that period, the number of major and minor DMR facilities increased, while the number of TRI facilities decreased.

It is important to note that discharges for the majority of coal mines are not included in the TRI or DMR data. There are over 1,200 active coal mines in the U.S. (U.S. EIA, 2012). TRI contains data for facilities in certain SIC codes, including those for coal mining (1221, 1222, and

1231). However, only coal mines with at least 10 full-time employees or their equivalent, and that manufacture, use, or otherwise process certain chemicals at or above an activity threshold report to TRI (U.S. EPA, 2009). The 2008 Coal Mining Detailed Study found that only 21 coal mines had data in TRI (U.S. EPA, 2008); only 17 coal mines had data in the 2011 TRI database (*TRILTOutput2011_v1*). For DMR data, many states classify coal mines as "minor dischargers" and, as a result, do not enter DMR data into EPA's ICIS-NPDES or PCS systems.[14] EPA's 2008 Detailed Study for the Coal Mining Point Source Category found that fewer than one-fourth of the coal mines were represented in the EPA's DMR storage system (U.S. EPA, 2008).

5.2.2 Coal Mining Manufacturing Category Pollutants of Concern

For its 2013 annual review, EPA's review of the Coal Mining Category focused on the 2011 DMR discharges because the 2011 DMR data dominate the category's combined TWPE. Table 5-2compares the five pollutants with the highest contribution to the 2011 DMR TWPE. Table 5-2 also presents the 2011 DMR TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). In addition, as a point of comparison, Table 5-2 shows the 2009 DMR TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012).

Iron, mercury, sulfate, and manganese contribute approximately 92 percent of the total 2011 DMR TWPE. EPA's investigations of reported discharges of the top four pollutants are described in Sections 5.3 to 5.6. EPA did not investigate the other pollutants as part of the 2013 Annual Review, including total residual chorine, because they represent approximately 8 percent of the 2011 DMR TWPE for the Coal Mining Category.

Table 5-2. Coal Mining Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
Iron	192	57,100	12,200	6,460
Mercury	16	50,900	11,000	6,190
Sulfate	68	42,500	880	1,960
Manganese	96	22,900	16,500	8,240
Total Residual Chlorine	10	4,260	4,260[b]	28.9
Top Pollutants, Total	**NA**	**178,000**	**44,900**	**22,900**
Coal Mining Category, Total	**212[c]**	**189,000**	**55,900**	**25,600**

Sources: *DMRLTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012)
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Total residual chlorine discharges contribute 2 percent of the 2011 category DMR TWPE. Therefore, EPA did not review total residual chlorine discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.

[14] The 2011 DMR database has data for 13 major and 205 minor coal mines (*DMRLTOutput2011_v1*). Because EPA does not ask the permitting authority to enter data for minor facilities into the DMR database, this is a small percentage of the over 1,000 active coal mines in the U.S. For further details on major and minor discharges in DMR data, see Section3.2.4 of this report.

5.2.3 Coal Mining Category Iron Discharges in DMR

EPA's investigation of the iron discharges revealed that Seneca Mine, in Hayden, CO, accounts for 79 percent of the 2011 DMR iron discharges (shown in Table 5-3). EPA did not investigate the remaining mines discharging iron.

Table 5-3. Top 2011 DMR Iron Discharging Mines

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Seneca Mine (Seneca Coal Co.)	Hayden, CO	8,020,000	44,900	79%
All other iron dischargers in the Coal Mining Category[a]		2,180,000	12,200	21%
Total		**10,200,000**	**57,100**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 191 other mines that have iron discharges in the 2011 DMR data.

Seneca Mine in Hayden, CO discharges iron from nine outfalls. The facility no longer operates as a mine, but monitoring of discharges continues as the surrounding areas undergo remediation (Cochran, 2013). As part of the 2013 Annual Review, EPA contacted the mine about their 2011 iron discharges. Seneca Mine provided corrected discharge concentrations after identifying a unit error for seven outfalls (Cochran, 2013). Table 5-4 presents Seneca Mine's 2011 original and corrected yearly average iron concentrations, along with the average flow values reported in the DMR Pollutant Loading Tool for the nine outfalls. Using these corrected values, Seneca Mine's iron TWPE decreases from 44,900 to 46.5, reducing the Coal Mining Category's iron TWPE from 57,100 to approximately 12,200, as shown in Table 5-2.

Table 5-4. Seneca Mine's 2011 DMR Original and Corrected Iron Discharges

Outfall	Original Average Flow (MGD)	Original Average Iron Concentration (mg/L)	Corrected Concentration (mg/L)
005	0.245	643	0.643
006	0.587	255	0.255
008	0.357	0.170	0.170
010	0.483	243	0.243
011	0.069	251	0.251
012	0.188	293	0.365
013	0.021	0.233	0.233
016	0.362	635	0.635
017	1.08	580	0.578

Source: *DMRLTOutput2011_v1*; Cochran, 2013.

5.2.4 Coal Mining Category Mercury Discharges in DMR

EPA's investigation of the mercury discharges revealed that Spartan Mine in Sparta, IL accounts for 78 percent of the 2011 DMR mercury compound discharges (shown in Table 5-5). EPA did not investigate the remaining mines discharging mercury.

Table 5-5. Top 2011 DMR Mercury Discharging Mines

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Spartan Mine (Alpena Vision Resources)	Sparta, IL	341	39,900	78%
All other mercury dischargers in the Coal Mining Category[a]		94	11,000	22%
Total		**435**	**50,900**	**100%**

Source: *DMRLTOutput2011_v1*.
[a] There are 15 remaining mines that have mercury discharges in the 2011 DMR data.

Spartan Mine in Sparta, IL, is the top mercury discharging mine. The mine closed in 1998; since closing, its activities are limited to reclamation. Spartan Mine discharges acid mine drainage from coal refuse piles. Discharges from Outfall 001 contain mercury and flow into a pond that serves as a tributary to Mary's River (IL EPA, 2010). During the quarter when the pond is discharging, the mine collects and analyzes pollutant concentrations from a minimum of nine grab samples (IL EPA, 2010). As part of the 2013 Annual Review, EPA contacted the mine about their 2011 mercury concentrations and received corrected discharge concentrations. The facility contact indicated that the 2011 mercury concentrations were reported in units of micrograms per liter instead of nanograms per liter, as they were measured (Voshel, 2013). Table 5-6 presents the original and corrected concentrations, and average flow rates from the mine. Using the corrected concentrations, the mine's mercury TWPE decreases from 39,900 to 0.11, reducing the Coal Mining Category's mercury TWPE from 50,900 to 11,000, as shown in Table 5-2.

Table 5-6. Spartan Mine's 2011 DMR Original and Corrected Mercury Discharges from Outfall 001

Monitoring Period	Average Flow (MGD)	Original Average Iron Concentration (mg/L)	Corrected Concentration (mg/L)
31-Jan-11	0.86	0.69	0.00000069
31-May-11	0.86	0.58	0.00000058
31-Dec-11	0.36	0.0000054	0.0000054

Sources: *DMRLTOutput2011_v1*; Voshel, 2013.

5.2.5 Coal Mining Category Sulfate Discharges in DMR

EPA's investigation of the sulfate discharges revealed that Peabody Midwest Mining, LLC (Peabody) in Ridge Farm, IL accounts for 98 percent of the 2011 DMR sulfate discharges (shown in Table 5-7). EPA did not investigate the remaining mines discharging sulfate.

Table 5-7. Top 2011 DMR Sulfate Discharging Mines

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Peabody Midwest Mining, LLC	Ridge Farm, IL	7,440,000,000	41,700	98%
All other sulfate dischargers in the Coal Mining Category[a]		150,000,000	841	2%
Total		**7,590,000,000**	**42,500**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 67 remaining mines that have sulfate discharges in the 2011 DMR data.

Peabody in Ridge Farm, IL, discharges sulfate from outfall 003. In reviewing the concentration of the mine's 2011 sulfate discharges, EPA noted that the March 2011 concentration was 10,000 times greater than other months (see Table 5-8). As part of the 2013 Annual Review, EPA requested Peabody's 2011 DMR reports from the Illinois Environmental Protection Agency (IL EPA). The discharge and concentration information provided by the state listed a monthly minimum for March 2011 of 498 mg/L and a monthly maximum of 647 mg/L (IL EPA, 2013), which is consistent with the order of magnitude of the sulfate discharges reported for the other months. As a result, EPA assumed that the unusually high sulfate concentration was a unit reporting error, and corrected the value by dividing the March 2011 sulfate concentration by 10,000. Table 5-8 presents Peabody's 2011 original and corrected monthly sulfate concentrations along with the flow discharges for outfall 003. Using the corrected value of 586 mg/L for the March 2011 sulfate concentration, Peabody's sulfate TWPE decreases from 41,700 to 39.1, reducing the Coal Mining Category's sulfate TWPE from 42,500 to 880, as shown in Table 5-2.

Table 5-8. Peabody's 2011 Original and Corrected Monthly Sulfate and Flow Discharges from Outfall 003

Monitoring Period Date[a]	Original Average Flow (MGD)	Original Sulfate Concentration (mg/L)	Corrected Sulfate Concentration (mg/L)
31-Jan-11	4.92	677	677
28-Feb-11	12.6	500	500
31-Mar-11	4.91	5,856,667	586
31-Apr-11	19.4	486	486
31-May-11	4.73	292	292
30-June-11	6.84	398	398
31-Oct-11	0.38	789	789
30-Nov-11	0.38	789	789
31-Dec-11	1.37	969	969

Source: *DMRLTOutput2011_v1*.
[a] The mine reported no flow for July, August, and September 2011. Therefore, sulfate concentrations were not reported for those months.

5.2.6 Coal Mining Category Manganese Discharges in DMR

EPA's investigation of the manganese discharges revealed that Nubay Mining LLC (Nubay Mining) in Galatia, IL, and Texas Westmoreland Coal Co. (Texas Westmoreland) in

Jewett, TX, account for 41 percent of the 2011 DMR sulfate discharges (shown in Table 5-7). EPA did not investigate the remaining mines discharging manganese.

Table 5-9. Top 2011 DMR Manganese Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Nubay Mining LLC	Galatia, IL	93,800	6,570	29%
Texas Westmoreland Coal Co.	Jewett, TX	40,700	2,850	12%
All other manganese dischargers in the Coal Mining Category[a]		193,000	13,500	59%
Total		**327,000**	**22,900**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 94 remaining mines that have manganese discharges in the 2011 DMR data.

Nubay Mining

Nubay Mining in Galatia, IL, discharges manganese from outfalls 002, 005, and 009. In reviewing 2011 DMR manganese discharges from the mine, EPA noted that the September 2011 average flow from outfall 002 and the April 2011 average flow from outfall 009 were 1,000 times higher than other flows from these outfalls. As shown in Table 5-10, EPA concluded that these reported flows were in error and corrected the average flow from these outfalls. Incorporating the data correction, Nubay Mining's manganese TWPE decreases from 6,570 to 129, reducing the Coal Mining Category's manganese TWPE from 22,900 to 16,500, as shown in Table 5-2.

Table 5-10. Nubay's 2011 Original and Corrected Monthly Manganese and Flow Discharges

Outfall	Monitoring Period Date[a]	Original Average Flow (MGD)	Corrected Average Flow (MGD)	Original Manganese Concentration (mg/L)
002	30-Apr-11	0.4	0.4	0.75
002	31-May-11	1.72	1.72	0.75
002	30-June-11	1.72	1.72	1.76
002	30-Sep-11	1,730	1.73	0.19
002	31-Dec-11	1.72	1.72	0.65
005	31-Jan-11	3.45	3.45	.002
005	28-Feb-11	1.72	1.72	.001
005	31-Mar-11	1.72	1.72	0.21
005	30-Sep-11	3.45	3.45	0.002
005	31-Dec-11	3.45	3.45	0.19
009	30-Apr-11	500	0.5	0.079
009	31-May-11	0.3	0.3	0.074

Table 5-10. Nubay's 2011 Original and Corrected Monthly Manganese and Flow Discharges

Outfall	Monitoring Period Date[a]	Original Average Flow (MGD)	Corrected Average Flow (MGD)	Original Manganese Concentration (mg/L)
009	30-Nov-11	0.3	0.3	0.002
009	31-Dec-11	0.3	0.3	0.032

Source: *DMRLTOutput2011_v1*.
[a] The mine reported no flow for January, February, March, July, August, October and November 2011 from outfall 002; April, May, June, July, August, October and November from outfall 005; and January, February, March, June, July, August, September, and October 2011 from outfall 009. Therefore, manganese concentrations were not reported for those months.

Texas Westmoreland

Texas Westmoreland in Jewett, TX, discharges manganese from outfalls 001, 003, and 004. The mine is a surface mine for bituminous coal and lignite (Envirofacts). As shown in Table 5-11, EPA did not identify any obvious reporting errors or data corrections; manganese discharges have remained consistent from 2007-2011.

Table 5-11. Texas Westmoreland's Yearly Manganese DMR Discharges

Year of Discharge	Total Manganese Pounds Discharged	Total Manganese TWPE Discharged
2007	34,300	2,400
2008	48,300	3,380
2009	21,200	1,480
2010	31,700	2,220
2011	40,700	2,850

Source: *DMRLTOutput2011_v1*.

According to ICIS-NPDES, Texas Westmoreland's NPDES permit limits the concentration of manganese in the mine's discharges to not more than 1 milligram per day monthly average and 2 milligrams per day daily maximum for all three outfalls (DMR Pollutant Loading Tool). Table 5-12 presents the mine's reported 2011 manganese discharges. Table 5-12 also presents the mine's NPDES permit limits and the Coal Mining effluent limitations guidelines and standards (ELGs) limits for manganese for the Acid or Ferruginous Mine Drainage subcategory (Subcategory C). See Section 4 of the Coal Mining Detailed Study for additional details on the Coal Mining ELGs (U.S. EPA, 2008). As shown in Table 5-12, the mine's reported 2011 manganese discharges do not exceed its permit limits or the Coal Mining ELGs.

Table 5-12. Texas Westmoreland's 2011 Monthly Manganese and Flow Discharge Data, NPDES Manganese Permit Limits, and Coal Mining ELGs Subpart C Manganese Limits

2011 Monthly Manganese and Flow Discharge Data				NPDES Manganese Permit Limits		Coal Mining ELGs Subpart C Manganese Limits	
Outfall	**Monitoring Period Date** [a]	**Average Flow (MGD)**	**Average Manganese Discharge (mg/L)**	**Daily Maximum (mg/L)**	**Monthly Average (mg/L)**	**Daily Maximum (mg/L)**	**Monthly Average (mg/L)**
001	31-Jan-11	34.8	0.96	2	1	4	2
001	28-Feb-11	22.7	0.2	2	1	4	2
001	31-Mar-11	28.4	0.71	2	1	4	2
001	30-Apr-11	30.1	0.53	2	1	4	2
001	31-May-11	31.8	0.64	2	1	4	2
001	31-Jul-11	23.6	0.11	2	1	4	2
001	30-Sep-11	40.7	0.44	2	1	4	2
001	31-Dec-11	33.5	0.73	2	1	4	2
003	31-Jan-11	14.1	0.06	2	1	4	2
003	28-Feb-11	11	0.05	2	1	4	2
003	31-Mar-11	2.9	0.14	2	1	4	2
003	30-Apr-11	2.91	0.08	2	1	4	2
003	31-May-11	2.9	0.79	2	1	4	2
003	30-Jun-11	14.8	0.12	2	1	4	2
003	31-Jul-11	0.84	0.16	2	1	4	2
003	30-Sep-11	4.53	0.01	2	1	4	2
003	31-Dec-11	34.7	0.02	2	1	4	2
004	31-May-11	4.8	0.03	2	1	4	2

Source: *DMRLTOutput2011_v1; Coal Mining Point Source Category BPT, BAT, BCT Limitations and New Source Performance Standards—40 CFR Part 434*.
BAT: Best available technology economically achievable.
BPT: Best practicable control technology.
NSPS: New source performance standards.
[a] The mine reported no flow for June, August, October and November 2011 from outfall 001; August, October and November 2011 from outfall 003; and January, February, March, April, June, July, August, September, October, November and December 2011 from outfall 004. Therefore, manganese concentrations were not reported for those months.

5.2.7 Coal Mining Category Findings

The estimated toxicity of the Coal Mining Category discharges resulted from iron, mercury, sulfate, and manganese discharges. From the 2013 Annual Review, EPA has identified the following:

- One facility, Seneca Mine, contributes the majority of the iron discharges to the 2011 DMR data. EPA identified a significant error in the concentration data for iron for six of the nine outfalls discharging iron. With these errors corrected, the mine's iron TWPE decreases from 44,900 to 46.5, reducing the Coal Mining Category's iron TWPE from 57,100 to 12,200.

- One facility, Spartan Mine, contributes the majority of the mercury discharges to the 2011 DMR data. EPA identified an error in the concentrations reported for the mine, which the facility contact corrected. With this error corrected, the mine's mercury TWPE decreases from 39,900 to 0.11, reducing the Coal Mining Category's mercury TWPE from 50,900 to 11,000.
- One facility, Peabody Midwest Mining, LLC, contributes the majority of the sulfate discharges to the 2011 DMR data. EPA identified a significant error in the sulfate concentration reported in March 2011. With this error corrected, the mine's TWPE decreased from 41,700 to 39.1, reducing the Coal Mining Category's sulfate TWPE from 42,500 to 880.
- Two mines, Nubay Mining LLC and Texas Westmoreland Coal Co., contribute the majority of the manganese discharges in the 2011 DMR data. EPA confirmed manganese discharges for the Texas Westmoreland facility were below NPDES permit limits, as well as under the Coal Mining ELGs. EPA identified an error in the reported flow rates for Nubay Mining LLC. With this error corrected, the mine's TWPE decreased from 6,570 to 129, reducing the Coal Mining Category's manganese TWPE from 22,900 to 16,500.
- Correcting the reporting errors identified during the 2013 Annual Review decreases the 2011 Coal Mining Category TWPE from 190,000 to 56,500. This change would drop the category outside the top 95 percent that EPA prioritized for preliminary review as part of the 2013 Annual Review.

5.2.8 References for Coal Mining Category

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12. U.S. EPA. 2014. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans.* Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170. DCN 07756.

13. Voshel, Anne. 2013. Telephone Communication with Anne Voshel, Alpena Vision Resources – Spartan Mine, and Julia Kolberg, Eastern Research Group, Inc. Re: 2011 DMR Mercury Discharges. (December 31). EPA-HQ-OW-2014-0170. DCN 07876.

5.3 Drinking Water Treatment (Potential New Category)

EPA selected the Drinking Water Treatment (DWT) industrial category for preliminary review because it continues to rank high, in terms of toxic-weighted pound equivalents (TWPE), in the point source category rankings. The DWT industrial category is not currently regulated by national effluent limitations guidelines and standards (ELGs); however, EPA reviewed these discharges to determine if a new regulatory category is appropriate for controlling wastewater discharges.

EPA reviewed discharges from the DWT industrial category as part of the 2004 Annual Review, because at that time DWT ranked high in terms of TWPE relative to the other categories and was identified as a potential category of concern by public commenters (U.S. EPA, 2004). In 2011, EPA published the results of the industrial category review, which included a literature review, site visits, and a survey of the DWT industry. A summary of the information collected as part of the review can be found in EPA's *Drinking Water Treatment Plant Residuals Management Technical Report: Summary of Residuals Generation, Treatment, and Disposal at Large Community Wastewater Systems* (the 2011 DWT Report) report (U.S. EPA, 2011). As stated in the 2011 DWT Report, EPA determined that NPDES permits (individual and general) best control discharges from these facilities.

This section summarizes the results of the 2013 Annual Review pertaining to the DWT industrial category. EPA focused on discharges of total residual chlorine and metals, which were also the focus of prior reviews, because of their high TWPE relative to the other pollutants discharged by establishments in this industrial category.

5.3.1 DWT Industrial Category 2013 Toxicity Rankings Analysis

Table 5-13 compares the toxicity rankings analysis (TRA) results for the DWT Category from the 2011 and 2013 Annual Reviews. As discussed in this section, EPA's review of the DWT Category identified data errors that affect the 2011 DMR data and TWPE. The bottom row of Table 5-13 shows the corrected data resulting from this review.

Table 5-13. DWT Industrial Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

		DWT Category Facility Counts			DWT Category TWPE		
Year of Discharge	Year of Review	Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total TWPE
2009	2011	3	7	854	132	408,000	408,000
2011	2013	2	18	1,005	1,640	1,380,000	1,390,000
2011[d]	2013				1,640	974,000	976,000

Sources: *DMRLTOutput2011_v1* (for 2011 DMR), *TRILTOuptut2011_v1* (for 2011 TRI), *DMRLoads2009_v2* (for 2009 DMR), and *TRIReleases2009_v2* (for 2009 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2011 data after corrections made during the 2013 Annual Review.

5.3.2 DWT Industrial Category Pollutants of Concern

EPA's 2013 Annual Review of the DWT industrial category focused on 2011 DMR discharges because the 2011 DMR data account for the majority of the industrial category's combined TWPE (over 99 percent). Table 5-14 lists the five pollutants with the highest contribution to the 2011 DMR TWPE. Table 5-14 also presents the 2011 DMR TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). As a point of comparison, Table 5-14 provides the 2009 DMR TWPE for these top five pollutants. Consistent with the 2011 industry review of DWT facilities, for the 2013 Annual Review, EPA identified that total residual chlorine, aluminum, and copper contributed the highest amount of TWPE to DWT discharges. However, as shown in Table 5-14, the 2011 DMR TWPE for the DWT industrial category (after corrections identified during this annual review) has more than doubled since 2009.

Table 5-14. DWT Industrial Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
Total Residual Chlorine	644	416,000	181,000	131,000
Aluminum	250	346,000	171,000	214,000
Copper	137	127,000	127,000	12,300
Mercury	52	113,000	113,000	159
Lead	98	110,000	110,000	1,640
Top Pollutant Total	**NA**	**1,110,000**	**701,000**	**359,000**
DWT Category Total	**1,023[a]**	**1,380,000**	**974,000**	**408,000**

Sources: *DMRLTOutput2011_v1* and *DMRLoads2009_v2*.
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Number of facilities reporting TWPE greater than zero.

As shown in Table 5-15, increases in total residual chlorine, copper, mercury, and lead are driving the increase in the category's TWPE. Table 5-15 also shows that the total number of facilities reporting DMR discharges for the top five pollutants has increased by more than 60 percent for copper, mercury, and lead from 2009 to 2011.

Table 5-15. DWT Industrial Category Count of Facilities for 2011 Top DMR Pollutants

Pollutant	Number of Facilities Reporting Pollutant in 2009 DMR Data			Number of Facilities Reporting Pollutant in 2011 DMR Data			Total Facility Count Percent Increase
	Major	Minor	Total	Major	Minor	Total	
Total Residual Chlorine	5	542	547	10	634	644	18%
Aluminum	1	233	234	2	248	250	7%
Copper	5	79	84	12	125	137	63%
Mercury	1	30	31	6	46	52	68%
Lead	2	57	59	7	91	98	66%

Source: *DMRLTOutput2011_v1* and *DMRLoads2009_v2*.

For the 2013 Annual Review of the DWT industrial category, EPA investigated all top five DMR pollutants for the category. However, because of the large number of facilities in the DWT industrial category, EPA only reviewed the top facilities reporting total residual chlorine and aluminum discharges to verify reported data and identify anomalous data points that might need correction. The results of EPA's 2013 Annual Review are presented in sections 5.3.3 through 5.3.5.

5.3.3 DWT Industrial Category Total Residual Chlorine Discharges in DMR

EPA identified 644 drinking water treatment facilities with 2011 DMR total residual chlorine discharges. Two facilities, PRASA WTP PTA Vieja Ponce and PRASA WTP Sabana Grande, account for 58 percent of the 2011 DMR total residual chlorine discharges (shown in Table 5-16). EPA did not investigate the remaining facilities discharging total residual chlorine as part of the 2013 Annual Review.

Table 5-16. Top 2011 DMR Total Residual Chlorine Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
PRASA WTP PTA Vieja Ponce	Ponce, PR	397,000	199,000	48%
PRASA WTP Sabana Grande	Sabana Grande, PR	80,700	40,400	10%
Remaining Facilities Reporting Total Residual Chlorine Discharges[a]		353,000	177,000	42%
Total		**831,000**	**416,000**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 642 remaining facilities that have total residual chlorine discharges in the 2011 DMR data.

PRASA WTP PTA Vieja Ponce

PRASA WTP PTA Vieja Ponce (PRASA Vieja Ponce) in Ponce, Puerto Rico, discharges total residual chlorine from outfall 001. In reviewing the facility's 2011 DMR total residual chlorine data, EPA noted that the October 2011 flow and total residual chlorine concentration were at least one order of magnitude higher than the other 2011 flows and concentrations. As shown in Table 5-17, EPA determined that the reported October 2011 flow and concentration were in error and corrected these values. These corrections decreased the facility's total residual chlorine TWPE from 199,000 to 3,700. This change reduced the 2011 DMR total residual chlorine TWPE by 195,000. Additionally, the facility has a total residual chlorine permit limit of 0.5 mg/L (DMR Pollutant Loading Tool). PRASA Vieja Ponce exceeded its permit limit nine months out of the year. Therefore, facility-specific permitting action may be appropriate to address total residual chlorine discharges from PRASA Vieja Ponce.

Table 5-17. PRASA Vieja Ponce's 2011 DMR Original and Corrected Flow and Total Residual Chlorine Discharges for Outfall 001

Monitoring Period Date	Original Average Flow (MGD)	Corrected Average Flow (MGD)	Original Average Total Residual Chlorine Concentration (mg/L)	Corrected Average Total Residual Chlorine Concentration (mg/L)
31-Jan-2011	0.34	0.34	0.57	0.57
28-Feb-2011	0.41	0.41	1.31	1.31
31-Mar-2011	0.52	0.52	2.1	2.1
30-Apr-2011	0.26	0.26	4.1	4.1
31-May-2011	1.48	1.48	4.8	4.8
30-Jun-2011	0.75	0.75	1.87	1.87
31-Jul-2011	1.33	1.33	0.46	0.46
31-Aug-2011	0.89	0.89	0.73	0.73
30-Sep-2011	0.52	0.52	0.49	0.49
31-Oct-2011	53.6	5.36	28.4	2.84
30-Nov-2011	0.73	0.73	0.51	0.51
31-Dec-2011	0.61	0.61	0.46	0.46

Source: *DMRLTOutput2011_v1*.

PRASA WTP Sabana Grande

PRASA WTP PTA Vieja Ponce (PRASA Sabana Grande) in Sabana Grande, Puerto Rico, discharges total residual chlorine from outfall 001. In reviewing the facility's 2011 DMR total residual chlorine data, EPA noted that the reported February 2011 flow was at least three orders of magnitude higher than the other 2011 flows. As shown in Table 5-18, EPA determined that the reported February 2011 flow was in error and corrected the flow. This correction decreased the facility's total residual chlorine TWPE from 40,400 to 52.6. This change reduced the 2011 DMR total residual chlorine TWPE by 40,300.

Table 5-18. PRASA Sabana Grande's 2011 DMR Original and Corrected Flows for Outfall 001

Monitoring Period Date	Original Average Flow (MGD)	Corrected Average Flow (MGD)
31-Jan-2011	0.079	0.079
28-Feb-2011	500	0.05
31-Mar-2011	0.105	0.105
30-Apr-2011	0.107	0.107
31-May-2011	0.064	0.064
30-Jun-2011	0.057	0.057
31-Jul-2011	0.091	0.091
31-Aug-2011	0.11	0.11
30-Sep-2011	0.032	0.032
31-Oct-2011	0.084	0.084
30-Nov-2011	0.202	0.202
31-Dec-2011	0.17	0.17

Source: *DMRLTOutput2011_v1*.

Further Review of 2011 DMR Total Residual Chlorine Discharges

Additionally, EPA reviewed the information on total residual chlorine discharges collected as part of the 2011 review of the DWT industrial category. As shown in Table 4-3 of EPA's 2011 DWT Report (U.S. EPA, 2011), EPA reviewed general and individual NPDES permits for total residual chlorine permit limitations from 21 states. During the 2011 review of the DWT industrial category, EPA determined that the majority of the permits reviewed contained monthly average total residual chlorine permit limitations ranging from 0.01 mg/L to 1.0 mg/L.

For the 2013 Annual Review, EPA identified the minimum, maximum, and median 2011 DMR total residual chlorine facility average concentrations and compared those values to the maximum monthly average permit limitation identified in EPA's 2011 DWT Report (1.0 mg/L). As shown in Table 5-19, the median of the facility average DMR total residual chlorine concentrations for 2011 is well below the maximum monthly average permit limitation identified in the 2011 DWT Report. Further, 93 percent of the facilities reporting total residual chlorine have average concentrations below the maximum monthly average permit limitation identified in the 2011 DWT Report.

Table 5-19. 2011 DMR Total Residual Chlorine Concentrations (mg/L)

Maximum Monthly Average Permit Limitation (mg/L)	Minimum Reported 2011 Average Concentration (mg/L)	Maximum Reported 2011 Average Concentration (mg/L)	Median Reported 2011 Average Concentration (mg/L)	Total Number of Facilities Discharging Total Residual Chlorine	Count (Percent) of Facilities over Maximum Monthly Average Permit Limitation
1.0	0.00001	102,000	0.06	644	42 (7%)

Sources: 2011 DWT Report (U.S. EPA, 2011) and *DMRLTOutput2011_v1*.

5.3.4 DWT Industrial Category Aluminum Discharges in DMR

EPA identified 250 drinking water treatment facilities with 2011 DMR aluminum discharges. EPA's investigation of the aluminum discharges revealed that two facilities, Sanford Springs WTP and Dekalb Jackson WTP, account for 51 percent of the 2011 DMR aluminum discharges (shown in Table 5-20). EPA did not investigate the remaining facilities' aluminum discharges as part of the 2013 Annual Review.

Table 5-20. Top 2011 DMR Aluminum Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Sanford Springs WTP	Piedmont, AL	1,930,000	116,000	34%
Dekalb Jackson WTP	Flat Rock, AL	984,000	59,100	17%
Remaining Facilities Reporting Aluminum Discharges[a]		2,840,000	171,000	49%
Total		**5,760,000**	**346,000**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 248 remaining facilities that have aluminum discharges in the 2011 DMR data.

Sanford Springs WTP

Sanford Springs WTP (Sanford Springs) in Piedmont, AL, discharges aluminum from outfall 001. EPA contacted the facility to confirm its aluminum discharges. The facility contact stated that the 2011 flow values, presented in Table 5-21, should be in units of gallons per minute, not million gallons per day. The facility contact explained that outfall 001 is a backwash/flush outfall for the facility and only discharges for ten minutes per day; therefore, the flow rate is low (Ransom, 2013). This correction decreased the facility's aluminum TWPE from 116,000 to 1.16.

Table 5-21. Sanford Springs 2011 DMR Original and Corrected Flows for Outfall 001

Monitoring Period Date	Original Average Flow (MGD)	Corrected Average Flow (MGD)
31-Jan-2011	1,076	0.011
28-Feb-2011	865	0.009
31-Mar-2011	870	0.009
30-Apr-2011	1,029	0.010
31-May-2011	1,231	0.012
30-Jun-2011	1,540	0.015
31-Jul-2011	1,443	0.014
31-Aug-2011	1,441	0.014
30-Sep-2011	1,220	0.012
31-Oct-2011	1,163	0.012
30-Nov-2011	991	0.010
31-Dec-2011	901	0.009

Source: *DMRLTOutput2011_v1*.

Dekalb Jackson WTP

Dekalb Jackson WTP (Dekalb) in Flat Rock, AL, discharges aluminum from outfall 001. As part of the 2013 Annual Review, EPA contacted the facility to confirm its aluminum discharges. The facility contact stated that the 2011 flow values, presented in Table 5-22, were incorrect and should be divided by 1,000 (Rose, 2013). This correction decreased the facility's aluminum TWPE from 59,100 to 59.1.

Table 5-22. Dekalb 2011 DMR Original and Corrected Flows for Outfall 001

Monitoring Period Date	Original Average Flow (MGD)	Corrected Average Flow (MGD)
31-Jan-2011	159	0.159
28-Feb-2011	155	0.155
31-Mar-2011	146	0.146
30-Apr-2011	142	0.142
31-May-2011	151	0.151
30-Jun-2011	181	0.181
31-Jul-2011	168	0.168
31-Aug-2011	158	0.158

Table 5-22. Dekalb 2011 DMR Original and Corrected Flows for Outfall 001

Monitoring Period Date	Original Average Flow (MGD)	Corrected Average Flow (MGD)
30-Sep-2011	142	0.142
31-Oct-2011	145	0.145
30-Nov-2011	147	0.147
31-Dec-2011	156	0.156

Source: *DMRLTOutput2011_v1*.

Further Review of 2011 DMR Aluminum Discharges

Similar to total residual chlorine, EPA reviewed the information on aluminum discharges collected as part of the 2011 review of the DWT industrial category. As shown in Table 4-3 of EPA's 2011 DWT Report (U.S. EPA, 2011), EPA reviewed general and individual NPDES permits for aluminum limitations from 21 states. During the DWT industrial category review, EPA determined that the majority of permits reviewed contained monthly average aluminum permit limitations ranging from 0.75 mg/L to 4 mg/L.

For the 2013 Annual Review, EPA identified the minimum, maximum, and median 2011 DMR aluminum facility average concentrations and compared those values to the maximum monthly average permit limitation identified in EPA's 2011 DWT Report (4 mg/L). As shown in Table 5-23, the median of the facility average DMR aluminum concentrations for 2011 is well below the maximum monthly average permit limitation. Further, 95 percent of the facilities reporting aluminum have average concentrations below the maximum monthly average permit limitation identified in the 2011 DWT Report.

Table 5-23. 2011 DMR Aluminum Concentrations (mg/L)

Maximum Monthly Average Permit Limitation (mg/L)	Minimum Reported 2011 Average Concentration (mg/L)	Maximum Reported 2011 Average Concentration (mg/L)	Median Reported 2011 Average Concentration (mg/L)	Total Number of Facilities Discharging Aluminum	Count (Percent) of Facilities over Maximum Monthly Average Permit Limitation
4	0.0016	1,680	0.25	250	12 (4.8%)

Sources: 2011 DWT Report (U.S. EPA, 2011) and *DMRLTOutput2011_v1*.

During the 2011 review of the category, EPA determined that discharges from some drinking water treatment plants include certain pollutants because they are present in the source water (concentrated when removed from drinking water) and/or are the result of chemical treatment (including the presence of chemical impurities and disinfection by-products). As shown in Table 8-2 in the 2011 DWT Report, aluminum is listed as a source water contaminant removed from drinking water and is present in treatment chemicals (U.S. EPA, 2011).

5.3.5 DWT Industrial Category Copper, Mercury, and Lead Discharges in DMR

For 2011 DMR copper, mercury, and lead discharges, EPA focused its review on comparing the reported 2011 DMR discharge data to the permit limitations summarized in

EPA's 2011 DWT Report to determine if the discharge concentrations, on average, are higher than the permit limitations.

As with its review of total residual chlorine and aluminum, for the 2013 Annual Review EPA identified the minimum, maximum, and median 2011 DMR copper and lead facility average concentrations and compared those values to the maximum monthly average permit limitations listed in the 2011 DWT Report. As shown in Table 4-3 of EPA's 2011 DWT Report (U.S. EPA, 2011), EPA's review of general and individual NPDES permits identified seven states that include permit limitations for copper ranging from 0.0031 mg/L to 0.007 mg/L. Additionally, EPA identified four states that include permit limitations for lead ranging from 0.003 mg/L to 0.0081 mg/L.

As shown in Table 5-24, the median of the facility average DMR copper concentrations for 2011 is greater than the maximum monthly average permit limitation identified in the 2011 DWT Report (0.007 mg/L). Additionally, EPA determined that only 26 percent of the facilities reporting copper have average concentrations below the maximum monthly average permit limitation.

Table 5-24 also shows that the median of the facility average DMR lead concentrations for 2011 is less than the maximum monthly average permit limitation identified in the 2011 DWT Report (0.0081 mg/L). For 2011 DMR lead discharges, EPA determined that 87 percent of facilities reported lead concentrations lower than the maximum monthly average permit limitation.

Table 5-24. 2011 DMR Copper and Lead Concentrations (mg/L)

Pollutant	Maximum Monthly Average Permit Limitation (mg/L)	Minimum Reported 2011 Average Concentration (mg/L)	Maximum Reported 2011 Average Concentration (mg/L)	Median Reported 2011 Average Concentration (mg/L)	Total Number of Facilities Discharging Pollutant	Count (Percent) of Facilities over Maximum Monthly Average Permit Limitation
Copper	0.007	0.000017	4.8	0.012	137	102 (74.5%)
Lead	0.0081	0.00004	0.26	0.0015	98	13 (13.3%)

Sources: 2011 DWT Report (U.S. EPA, 2011), and *DMRLTOutput2011_v1*.

Mercury is not listed as a common regulated pollutant in Section 4.2 of the 2011 DWT Report. Therefore, for this analysis, EPA compared the DMR average mercury concentrations for 2011 presented in Table 5-25 to available wastewater treatment data for mercury. As an initial point of comparison, EPA compared the 2011 DMR average mercury concentrations to concentrations achieved by granular media filtration (GMF). This treatment technology was tested at a petroleum refinery to meet NPDES permit limitations. The study found that GMF could achieve effluent limitations ranging from 0.003 µg/L to 0.0167 µg/L (Pulliam et al., 2010). As shown in Table 5-25, 71 percent of the facilities reported mercury concentrations within that comparable treatability range.

Table 5-25. 2011 DMR Mercury Concentrations (mg/L)

Pollutant	Maximum GMF Treatability Concentration (mg/L)	Minimum Reported 2011 Average Concentration (mg/L)	Maximum Reported 2011 Average Concentration (mg/L)	Median Reported 2011 Average Concentration (mg/L)	Total Number of Facilities Discharging Mercury	Count (Percent) of Facilities over Maximum GMF Treatability Concentration (Percent)
Mercury	0.0000167	0.0000019	0.09	0.0000077	52	15 (28.8%)

Sources: Pulliam et al., 2010 and *DMRLTOutput2011_v1*.

During EPA's 2013 Annual Review of the DWT industrial category, EPA identified at least 137 facilities reporting discharges of copper, mercury, and lead; however, only three facilities contribute a majority of the TWPE for these pollutants. Though EPA did not evaluate any of the facility discharges of these pollutants in detail, similar to the findings for total residual chlorine and aluminum, EPA expects that some of the TWPE may be a result of data entry errors coupled with the large number of facilities reporting discharges.

During the 2013 Annual Review, EPA also reviewed the 2011 DWT Report to determine if copper, mercury, and lead are present in the source water or treatment chemicals at drinking water treatment plants. As shown in Table 8-2 in the 2011 DWT Report, all three pollutants are listed as source water contaminants removed from drinking water, and are present in treatment chemicals (U.S. EPA, 2011).

5.3.6 DWT Industrial Category Findings

The estimated toxicity of the DWT industrial category discharges resulted from total residual chlorine and metals. From the 2013 Annual Review, EPA has identified the following:

- The DWT industrial category DMR TWPE doubled from 2009 to 2011; however, the top pollutants (total residual chlorine and metals) stayed the same. Additionally, the number of facilities reporting each of the top pollutants increased from 2009 to 2011.
- EPA reviewed the top four dischargers of total residual chlorine and aluminum (which contributed more than 50 percent of the TWPE for each of these pollutants) and determined the following:
  1. One facility, PRASA Vieja Ponce, had errors in their 2011 DMR flow and total residual chlorine concentration values. EPA also determined that PRASA Vieja Ponce is exceeding its permit limitations for total residual chlorine. Therefore, facility-specific permitting action may be appropriate to address total residual chlorine discharges from PRASA Vieja Ponce.
  2. Additionally, EPA determined that the remaining three facilities each had errors in their reported flows for the 2011 DMR data. EPA made corrections to the flow and concentration data, which resulted in a decrease of the DWT industrial category TWPE from 1,390,000 to 976,000 TWPE.

- Additionally, EPA compared 2011 DMR average facility concentrations of total residual chlorine, aluminum, copper, and lead to monthly average permit limitations summarized in Section 4.2 of the 2011 DWT Report. Because mercury is not listed as a common regulated pollutant in Section 4.2 of the 2011 DWT Report, as an initial point of comparison, EPA compared the 2011 DMR concentrations to concentrations achieved by GMF (though not applied to drinking water treatment wastewater). EPA determined that the majority of concentrations reported for total residual chlorine, aluminum, mercury, and lead were below the maximum monthly average permit limitations or within the GMF mercury treatability range. However, EPA determined that the majority of copper concentrations exceeded the maximum monthly average permit limitation identified in the 2011 DWT Report.
- During the 2011 review of the category, EPA determined that discharges from some drinking water treatment plants include certain pollutants because they are present in the source water and from treatment chemicals. Source water and treatment chemical pollutants include aluminum, copper, mercury, and lead (see Table 8-2 in the 2011 DWT Report (U.S. EPA, 2011). Because of the different source water contributions and treatment chemicals at each plant (among other reasons), EPA determined that NPDES permits (general and individual) best control discharges from these facilities during the 2011 review of the category.
- Therefore, EPA does not consider the remaining top metals (aluminum, copper, lead, and mercury) as hazard priorities because the majority of the average facility concentrations are below the monthly average pollutant concentrations presented in the 2011 DWT Report. In addition, all of the pollutants were identified as potential source water contributions or treatment chemicals. EPA does not consider total residual chlorine discharges a hazard priority at this time because over 90 percent of the 2011 DMR average facility concentrations are below the maximum monthly average permit limitation.

5.3.7 References for DWT Industrial Category

1. ERG. 2014. Preliminary Category Review – Facility Data Review and Revised Calculations for PSC 501 – Drinking Water Treatment. (March). EPA-HQ-OW-2014-0170. DCN 07978.

2. Pulliam, Greg et al. (2010). A Coordinated Approach to Achieving NPDES Permit Compliance for Mercury and Selenium in a Refinery Effluent. Paper presented at WEFTEC 2010, Water Environment Federation. New Orleans, LA. EPA-HQ-OW-2014-0170. DCN 07973.

3. Ransom, Tim. 2013. Telephone communication with Tim Ransom, Sanford Spring Water Treatment Plant, and Kimberly Bartell, Eastern Research Group, Inc. Re: 2011 DMR Discharges for Sanford Springs Water Treatment Plant. (December 13). EPA-HQ-OW-2014-0170. DCN 07974.

4. Rose, Chris. 2013. Telephone and email communication with Chris Rose, Dekalb Jackson Water Treatment Plant, and Kimberly Bartell, Eastern Research Group, Inc. Re: 2011 DMR Discharges for Dekalb Jackson Water Treatment Plant. (December 13). EPA-HQ-OW-2014-0170. DCN 07975.

5. U.S. EPA. 2011. *Drinking Water Treatment Plant Residuals Management Technical Report: Summary of Residuals Generation, Treatment, and Disposal at Large Community Wastewater Systems* (EPA 820-R-11-003). Washington, D.C. (December). EPA-HQ-OW-2014-0170. DCN 07976.

5.4 Inorganic Chemicals Manufacturing (40 CFR Part 415)

EPA selected the Inorganic Chemicals Manufacturing (Inorganic Chemicals) Category for preliminary review because it continues to rank high, in terms of toxic-weighted pound equivalents (TWPE), in the point source category rankings. EPA also reviewed discharges from the Inorganic Chemicals Category in each of its Annual Reviews from 2004 through 2011, (except for 2008) (U.S. EPA, 2004a, 2005, 2006, 2007, 2009, 2011, 2012). This section summarizes the results of the 2013 Annual Review pertaining to the Inorganic Chemicals Category. EPA focused on discharges of dioxin and dioxin-like compounds, manganese and manganese compounds, and polychlorinated biphenyls (PCBs) from the toxic release inventory (TRI) because of their high TWPE relative to the rest of the pollutants discharged by the Inorganic Chemicals Category. Dioxin and dioxin-like compounds and manganese and manganese compounds, reviewed as part of the 2011 Annual Review, continue to be top pollutants of concern. Discharge data available for the 2013 Annual Review also showed that PCBs contribute significantly to the Inorganic Chemicals Category TWPE.

5.4.1 Inorganic Chemicals Category 2013 Toxicity Rankings Analysis

Table 5-26 compares the toxicity rankings analysis (TRA) results for the Inorganic Chemicals Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review, as discussed in the Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans (U.S. EPA, 2014). During the 2013 Annual Review, EPA did not identify any data corrections for the Inorganic Chemicals Category.

Table 5-26. Inorganic Chemicals Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

Year of Discharge	Year of Review	Inorganic Chemicals Category Facility Counts			Inorganic Chemicals Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total TWPE
2009[d]	2011	153	45	84	60,900	51,300	112,000
2011	2013	153	62	96	327,000	142,000	469,000

Sources: 2011 Annual Review Report (for 2009[d] DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.

As shown in Table 5-26, the TWPE for both TRI and DMR increased from 2009 to 2011. During that period, the number of TRI facilities has remained constant; however, the number of facilities in DMR has increased by 23 percent.

5.4.2 Inorganic Chemicals Category Pollutants of Concern

For its 2013 Annual Review, EPA's review of the Inorganic Chemicals Category focused on 2011 TRI discharges because the 2011 TRI data dominate the category's combined TWPE. Table 5-14 compares the five pollutants with the highest contribution to the 2011 TRI TWPE. In addition, as a point of comparison, Table 5-14 shows the 2009 TRI TWPE for these top five pollutants, based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012). During the 2013 Annual Review, EPA did not identify any data corrections for the Inorganic Chemicals Category.

Dioxin and dioxin-like compounds, manganese and manganese compounds, and PCBs account for approximately 92 percent of the total 2011 TRI TWPE in this industrial category. Dioxin and dioxin-like compounds and manganese and manganese compounds have consistently accounted for the majority of the Inorganic Chemicals Category TWPE in EPA's previous Annual Reviews:

- Dioxin and dioxin-like compounds are the top TRI-reported pollutant in 2011 and ranked second in 2009 for the Inorganic Chemicals Category (U.S. EPA, 2012). Dioxin and dioxin-like compounds were also the top TRI-reported pollutant in 2002 (U.S. EPA, 2006).
- Manganese and manganese compounds ranked second among TRI-reported pollutants in 2011 and ranked first in 2004, 2008, and 2009 for the Inorganic Chemicals Category (U.S. EPA, 2011).

EPA's investigations of reported discharges of the top three pollutants are presented in Sections 5.3.3 to 5.4.5. EPA investigated neither nitrate compounds, nor mercury and mercury compounds in the 2013 Annual Review because they represent only approximately 8 percent of the 2011 TRI TWPE for this category.

Table 5-27. Inorganic Chemicals Category Top TRI Pollutants

Pollutant	2011 TRI Data		2009 TRI Data
	Number of Facilities Reporting Pollutant	TWPE	TWPE
Dioxin and Dioxin-Like Compounds	6	279,000	2,170
Manganese and Manganese Compounds	21	14,100	35,800
Polychlorinated Biphenyls (PCBs)	2	7,010	0[a]
Nitrate Compounds	49	5,070[b]	3,910
Mercury and Mercury Compounds	13	4,250[b]	3,510
Top Pollutant Total	**NA**	**310,000**	**45,400**
Inorganic Chemicals Category Total	**153[c]**	**327,000**	**60,900**

Sources: *TRILTOutput2011_v1* (for 2011 TRI TWPE); 2011 Annual Review Report (for 2009 TRI TWPE) (U.S. EPA, 2012).
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] No facilities reported discharges of PCBs to TRI in 2009. Therefore, EPA did not review these discharges.
[b] Nitrate compounds and mercury and mercury compounds combined contribute 3 percent of the 2011 category TRI. Therefore, EPA did not review nitrate compound or mercury and mercury compound discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.

5.4.3 Inorganic Chemicals Category Dioxin and Dioxin-Like Compound Discharges in TRI

EPA's investigation of the dioxin and dioxin-like compound discharges revealed that Millennium Inorganic Chemicals, Inc., Plant I (Millennium Plant I), in Ashtabula, OH[15] accounts for 98 percent of the 2011 TRI dioxin and dioxin-like compound discharges (shown in Table 5-16). EPA did not investigate other facilities in this category discharging dioxin and dioxin-like compounds.

Table 5-28. Top 2011 TRI Dioxin and Dioxin Like Compound Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged [b]	Pollutant TWPE	Facility Percent of Category TWPE
Millennium Inorganic Chemicals, Inc. Plant I	Ashtabula, OH	0.00245	273,000	98%
Remaining Facilities Reporting Dioxin and Dioxin-Like Compound Discharges[a]		0.00581	6,110	2%
Total		**0.00826**	**279,000**	**100%**

Source: *TRILTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 5 remaining facilities that have dioxin and dioxin-like compound discharges in the 2011 TRI data.
[b] Dioxin TWPE values are calculated using a dioxin distribution submitted by the facility. Each dioxin congener making up the dioxin distribution has a different TWF. As a result, though facilities may discharge a greater amount of pounds of dioxin, the associated total pollutant TWPE may be less.

Millennium Plant I produces titanium dioxide using a chloride process (U.S. EPA, 2001). During this process, the facility converts rutile or high-grade ilmenite ore into titanium tetrachloride ($TiCl_4$) in a fluidized bed chlorinator. The resulting $TiCl_4$ is piped to an oxidizer as a vapor. In the oxidizer, purified $TiCl_4$ vapor is converted to TiO_2, or titanium dioxide (U.S. EPA, 2006). For further information on titanium dioxide manufacturing, see Section 9.6 in the *Technical Support Document for the 2006 Effluent Guidelines Program Plan* (U.S. EPA, 2006).

EPA contacted the facility about their dioxin and dioxin-like compound discharges. The facility contact stated that the formation of dioxin compounds occurs within an extremely narrow temperature range immediately following the chlorination process (Schmude, 2014). The facility measures the dioxin compounds based on quarterly sampling at the final effluent. The facility contact stated that in 2011, the non-detect data were inadvertently reported using the minimum detection limit. For other reporting years, the facility has reported non-detect data as zero (Schmude, 2014). The facility provided the 2011 flow rate and the 2012 grams of dioxin discharged. Table 5-29 presents Millennium Plant I's dioxin and dioxin-like compound discharges for discharge years 2007-2012. As shown, the discharge quantity for 2011 is significantly greater than other reporting years.

[15] The TRI ID for Millennium Inorganic Chemicals, Inc. Plant I in Ashtabula, OH, is 44004SCMCH2900M. This facility is not to be confused with the Millennium Inorganic Chemicals, Inc. Plant II, also in Ashtabula, OH, which is discussed in Section 5.3.5.

Table 5-29. Millennium Plant I's Yearly Dioxin and Dioxin-like Compound TRI Discharges

Year of Discharge	Total Dioxin and Dioxin-like Compounds Grams Discharged	Total Dioxin and Dioxin-like Compounds TWPE
2007	0	0
2008	0	0
2009	0.03	0.76
2010	0.16	2,396
2011	1.09	273,040
2012	0.14	NA

Source: *TRILTOutput2011_v1;* Schmude, 2014.
NA: Not Applicable. The Facility contact provided the total grams of dioxin discharged for 2012 but did not provide the dioxin congener distribution. Therefore, the dioxin TWPE for 2012 was not calculated.

Since Millennium Plant I reported its 2011 dioxin and dioxin-like compound discharges in error and did not provide a corrected 2011 quantity, EPA used the 2011 flow provided by the facility contact and the facility's TRI reported 2011 congener distribution to calculate its dioxin and dioxin-like compound discharge concentrations. Table 5-30 presents Millennium Plant I's calculated dioxin and dioxin-like compound discharges for 2011 and the EPA Method 1613B minimum levels (MLs) (U.S. EPA, 2004b). As shown, all 2011 dioxin and dioxin-like compound discharges are below EPA's Method 1613B MLs. EPA has limited confidence in dioxin concentrations measured below the Method 1613B ML. Further, Millennium Plant I is one of the few remaining U.S. facilities that manufactures titanium dioxide. Its dioxin and dioxin-like compound discharges do not represent discharges across the category as a whole.

Table 5-30. 2011 Concentrations of Dioxin and Dioxin-Like Compounds in Effluent Samples (pg/L) from Millennium Plant I and EPA Method 1613B Minimum Levels

Congener	TWF	1613B ML (pg/L)	Calculated 2011 Concentration (pg/L)[a]
Flow (MGY)[b]			868
Polychlorinated dibenzo p furans (CDFs)			
2,3,7,8-TCDF	43,819,553.68	10	4.8
1,2,3,7,8-PeCDF	7,632,640	50	23.8
2,3,4,7,8-PeCDF	557,312,000	50	24.0
1,2,3,4,7,8-HxCDF	5,760,000	50	24.2
1,2,3,6,7,8-HxCDF	14,109,440	50	24.4
2,3,4,6,7,8-HxCDF	51,204,160	50	24.3
1,2,3,7,8,9-HxCDF	47,308,800	50	24.0
1,2,3,4,6,7,8-HpCDF	85,760	50	26.1
1,2,3,4,7,8,9-HpCDF	3,033,984	50	24.3
1,2,3,4,6,7,8,9-OCDF	2,020.96	100	6.8
Polychlorinated dibenzo p dioxins (CDDs)			
2,3,7,8-TCDD	703,584,000	10	4.9
1,2,3,7,8-PeCDD	692,928,000	50	23.8
1,2,3,4,7,8-HxCDD	23,498,240	50	24.0

Table 5-30. 2011 Concentrations of Dioxin and Dioxin-Like Compounds in Effluent Samples (pg/L) from Millennium Plant I and EPA Method 1613B Minimum Levels

Congener	TWF	1613B ML (pg/L)	Calculated 2011 Concentration (pg/L)[a]
1,2,3,6,7,8-HxCDD	9,556,480	50	24.1
1,2,3,7,8,9-HxCDD	10,595,840	50	24.4
1,2,3,4,6,7,8-HpCDD	411,136	50	24.5
1,2,3,4,6,7,8,9-OCDD	6,585.6	100	6.5

Source: *TRILTOutput2011_v1*, U.S. EPA, 2004b.
ML: Minimum level established for EPA Method 1613B (U.S. EPA, 2004b).
[a] Concentrations calculated using the facility's reported congener distribution and flow in 2011.
[b] 2011 facility flow from facility contact (Schmude, 2014).

5.4.4 Inorganic Chemicals Category Manganese and Manganese Compound Discharges in TRI

EPA's investigation of the manganese and manganese compound discharges revealed that Millennium Inorganic Chemicals, Inc. Plant II (Millennium Plant II), in Ashtabula, OH[16] accounts for 39 percent of the 2011 TRI manganese and manganese compound discharges (shown in Table 5-31). EPA did not investigate the remaining facilities discharging manganese and manganese compounds.

Table 5-31. Top 2011 Manganese and Manganese Compound Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Millennium Inorganic Chemicals, Inc. Plant II	Ashtabula, OH	79,000	5,530	39%
Remaining Facilities Reporting Manganese and Manganese Compound Discharges[a]		122,000	8,540	61%
Total		**201,000**	**14,100**	**100%**

Source: *TRILTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 20 remaining facilities that have manganese and manganese compound discharges in the 2011 TRI data.

Similar to Millennium Plant I, discussed in Section 5.3.3, Millennium Plant II produces titanium dioxide using the chloride process (U.S. EPA, 2001). For further information on titanium dioxide manufacturing, see Section 9.6 in the *Technical Support Document for the 2006 Effluent Guidelines Program Plan* (U.S. EPA, 2006).

Table 5-32 presents Millennium Plant II's manganese and manganese compound discharges for discharge years 2007-2012. As shown, the discharge quantity for 2011 is higher than other reporting years. EPA contacted the facility about their 2011 manganese and manganese compound discharges. The facility contact confirmed the 2011 discharge quantity

[16] The TRI ID for the Millennium Inorganic Chemicals, Inc. Plant II in Ashtabula, OH is 44004SCMCH2426M. This facility is not to be confused with the Millennium Inorganic Chemicals, Inc. Plant I also located in Ashtabula, OH, discussed in Section 5.4.3.

and stated that the reported TRI discharge is based on direct sampling of the final effluent. The facility contact also stated that the increase in the manganese and manganese compound discharge in 2011 was due to a slight increase in flow. The increase in flow was said to result from many factors, including process rate, process conditions, and volume of stormwater. The facility contact also provided 2012 discharge quantity for comparison, and the discharges have subsequently decreased in 2012 (Schmude, 2014).

Millennium Plant II is one of the few remaining U.S. facilities that manufacture titanium dioxide. Its manganese and manganese compound discharges are not representative of facility discharges across the category as a whole.

Table 5-32. Millennium Plant II's Yearly Manganese and Manganese Compound TRI Discharges

Year of Discharge	Total Manganese and Manganese Compounds Pounds per Year Discharged	Total Manganese and Manganese Compounds TWPE
2007	36,000	2,520
2008	55,000	3,850
2009	23,000	1,610
2010	38,000	2,660
2011	79,000	5,530
2012	53,500	3,740

Source: *TRILTOutput2011_v1;* Schmude, 2014.

5.4.5 Inorganic Chemicals Category Polychlorinated Biphenyl (PCB) Compound Discharges in TRI

EPA's investigation of the PCB compound discharges revealed that DuPont Johnsonville Plant (DuPont Johnsonville), in New Johnsonville, TN, accounts for 97 percent of the 2011 TRI PCB compound discharges (shown in Table 5-33). EPA did not investigate DuPont Edgemoor in Edgemoor, DE, which accounts for the remaining 2 percent of the discharges.

Table 5-33. Top 2011 PCB Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
DuPont Johnsonville Plant	New Johnsonville, TN	0.2	6,810	97%
DuPont Edgemoor	Edgemoor, DE	0.00607	207	3%
Total		**0.206**	**7,010**	**100%**

Source: *TRILTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.

DuPont Johnsonville produces titanium dioxide using the chloride-ilmenite process (U.S. EPA, 2001). The chloride-ilmenite process is similar to the chloride process discussed in Section 5.3.3. The primary difference between the two processes is that the chloride-ilmenite process allows the use of lower-quality ore and easier oxidation than the chloride process (U.S. EPA, 2006). For further information on titanium dioxide manufacturing, see Section 9.6 in the *Technical Support Document for the 2006 Effluent Guidelines Program Plan* (U.S. EPA, 2006).

EPA contacted DuPont Johnsonville about their PCB discharges. The facility contact confirmed the discharges and stated that small amounts of fine solids in the wastewater discharge (resulting from the chlorination process) are the source of the PCB compounds (Martin, 2013). Table 5-34 presents the facility's PCB discharge quantity for years 2007-2011. As shown in Table 5-34, the facility's PCB discharges have doubled from 2010 to 2011. Therefore, facility-specific permitting action may be appropriate to address PCB discharges from the DuPont Johnsonville facility.

Table 5-34. DuPont Johnsonville's Yearly PCB TRI Discharges

Year of Discharge	Total PCB Pounds Discharged	Total PCB TWPE
2007	0.1	3,400
2008	0.1	3,400
2009	0	0
2010	0.1	3,400
2011	0.2	6,810

Source: *TRILTOutput2011_v1*.

5.4.6 Inorganic Chemicals Category Findings

The estimated toxicity of the Inorganic Chemicals Category discharges resulted from TRI dioxin and dioxin-like compounds, manganese and manganese compounds, and PCB discharges. From the 2013 Annual Review, EPA has identified the following:

- One facility, Millennium Inorganic Chemicals, Inc. Plant I, contributes the majority of the category's 2011 TRI dioxin and dioxin-like compound discharges. EPA determined that the facility inadvertently reported 2011 dioxin and dioxin-like compound discharges using the minimum detection limit, when historically they have reported non-detect data as zero. In evaluating the data as reported, the 2011 concentrations for all congeners are below EPA's Method 1613B ML. Therefore, further review of the facility's dioxin and dioxin-like compound discharges is not warranted at this time.
- One facility, Millennium Inorganic Chemicals, Inc. Plant II, accounts for 39 percent of the category's 2011 TRI manganese and manganese compound discharges. EPA determined that the 2011 manganese and manganese compound TRI discharge for the facility is an anomaly due to an increase in flow at the facility during 2011. This determination is supported by a decrease in the discharge in 2012. Therefore, further review of the facility's manganese and manganese compound discharges is not warranted at this time.
- One facility, DuPont Johnsonville Plant, accounts for the majority of the category's 2011 TRI PCB discharges. EPA determined that the facility's 2011 PCB discharges were accurate and increased from previous years. Therefore, facility-specific permitting action may be appropriate to address PCB discharges from this facility.

- For the Inorganic Chemicals Category, EPA determined the data do not support the need to review further the Inorganic Category as a whole.

5.4.7 References for Inorganic Chemicals Category

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3. Schmude, Robert. 2014. Telephone and Email Communication between Robert Schmude, Millennium Inorganic Chemicals, Inc., and Kimberly Bartell, Eastern Research Group, Inc. Re: 2011 TRI Dioxin and Manganese Discharges. (January 8). EPA-HQ-OW-2014-0170. DCN 07885.

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12. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report.* Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.

13. U.S. EPA. 2014. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans*. Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170. DCN 07756.

5.5 Iron and Steel Manufacturing (40 CFR Part 420)

EPA selected the Iron and Steel Manufacturing Category for preliminary review because it ranks high, in terms of toxic-weighted pound equivalents (TWPE), in the point source category rankings. EPA previously reviewed discharges from the Iron and Steel Manufacturing Category as part of the 2011 Annual Review (U.S. EPA, 2012). This section summarizes the results of the 2013 Annual Review, which focused on discharges of fluoride, aluminum, cyanide, and total residual chlorine, due to their high TWPE relative to the other pollutants in the Iron and Steel Manufacturing Category. These four pollutants, reviewed as part of the 2011 Annual Review, continue to be top pollutants of concern. For further background on the Iron and Steel Manufacturing Category, including an industry profile, see *The 2011 Annual Effluent Guidelines Review Report* (U.S. EPA, 2012).

5.5.1 Iron and Steel Manufacturing Category 2013 Toxicity Rankings Analysis

Table 5-35 compares the toxicity rankings analysis (TRA) results for the Iron and Steel Manufacturing Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review, as discussed in the Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans (U.S. EPA, 2014). As discussed below, EPA's review of the Iron and Steel Manufacturing Category identified several data errors that affect the 2011 DMR data and TWPE. The bottom row of Table 5-35 shows the corrected data resulting from this review.

Table 5-35. Iron and Steel Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

Year of Discharge	Year of Review	Iron and Steel Facility Counts			Iron and Steel Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total TWPE
2009[d]	2011	227	73	49	96,200	108,000	205,000
2011	2013	222	76	45	82,900	1,220,000	1,300,000
2011[e]	2013				82,900	214,000	297,000

Sources: 2011 Annual Review Report (for 2009[d] DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.
[e] 2011 data after corrections made during the 2013 Annual Review.

The DMR TWPE for the Iron and Steel industrial category increased from discharge year 2009 to 2011 by approximately 98 percent (after data corrections were made to the 2011 DMR data). As shown in Table 5-35, there has not been a significant increase in the total number of facilities reporting DMR data.

5.5.2 Iron and Steel Manufacturing Category Pollutants of Concern

For its 2013 Annual Review, EPA's review of the Iron and Steel Manufacturing Category focused on the 2011 DMR discharges because the 2011 DMR data account for 94 percent of the category's combined TWPE. Table 5-36 compares the five pollutants with the highest contribution to the 2011 DMR TWPE. Table 5-36 also presents the 2011 DMR TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). In addition, as a point of comparison, Table 5-36 shows the 2009 DMR TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012).

During EPA's review of the Iron and Steel Manufacturing Category, one facility (US Steel Mon Valley Works, Edgar Thomson Plant, in Braddock, PA) was identified as responsible for the majority of 2011 DMR TWPE in all top pollutant categories. The facility accounted for 99 percent of iron discharges, 97 percent of zinc discharges, and 98 percent of manganese discharges. During EPA's 2007 Annual Review, EPA identified an error in the 2004 DMR flow values. At that time, the facility contact indicated that the facility measures pollutant concentrations in their stormwater prior to commingling with noncontact cooling water (U.S. EPA, 2007), but the flow reported in the DMR was for the commingled stream. To reflect loading estimates accurately in the 2004 DMR data, EPA developed and applied a flow correction factor using the 2004 facility data to calculate the volume of stormwater in the total outfall flow (Belack, 2007). For the 2007 Annual Review and subsequent annual reviews, EPA used the corrected flow rate with the reported concentration to calculate the total mass load discharged from the facility. During the 2013 Annual Review, EPA determined that this correction should have been carried through for the 2011 DMR data. EPA subsequently made this data correction, which decreased the total Iron and Steel Category 2011 DMR TWPE from 1,220,000 to 290,000, and removed iron, zinc, and manganese as top pollutants discharged from this category.

Also during the course of EPA's review of the Iron and Steel Manufacturing Category, one facility submitted data corrections to their DMRs (Republic Conduit Manufacturing in Louisville, KY), which subsequently affected the top pollutants for this category. Prior to this data correction, the facility was identified as responsible for more than 98 percent of DMR hexavalent chromium discharges. However, the facility underwent an audit in the spring of 2013 and realized that their flow values had been submitted with the incorrect units on the facility's 2011 DMR (Gaylord, 2013). Incorporating this data correction further decreased the total Iron and Steel Category 2011 DMR TWPE from 290,000 to 246,000 and removed hexavalent chromium as a top pollutant.

After the data corrections discussed above were incorporated into the 2011 DMR data for the Iron and Steel Manufacturing Category, the top five pollutants with the highest contribution to the 2011 DMR TWPE, presented in Table 5-36, were fluoride, aluminum, cyanide, total residual chlorine, and silver. These contribute more than 69 percent of the total 2011 DMR TWPE for this category. EPA's investigations of reported discharges of the top four pollutants are presented in Sections 5.5.3 to 5.5.6. EPA did not investigate the other top pollutants as part of the 2013 Annual Review, including silver, because they account for 31 percent of the 2011 DMR TWPE for the Iron and Steel Manufacturing Category. As shown in Table 5-36, EPA's investigations of the top four pollutants identified additional data corrections, which further affected the category's TWPE.

Table 5-36. Iron and Steel Manufacturing Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
Fluoride	17	47,800	34,200	11,500
Aluminum	18	37,500	18,400	9,660
Cyanide	26	34,100	34,100	27,400
Total Residual Chlorine	29	28,600	28,600	9,810
Silver	4	15,900	15,900[b]	1,400
Top Pollutants, Total	**NA**	**164,000**	**131,000**	**59,800**
Iron and Steel Manufacturing Category, Total	**146[c]**	**246,000[d]**	**214,000**	**108,000**

Sources: *DMRLTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Silver discharges contribute 6 percent of the 2011 category TWPE. Therefore, EPA did not review silver discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.
[d] The Iron and Steel Category Total 2011 DMR TWPE value includes the corrections to the Edgar Thompson Plant and Republic Conduit Manufacturing data, described above. These corrections decreased the TWPE from 1,220,000, as presented in Table 5-35, to 246,000. EPA identified further corrections to the data, which are reflected in the Corrected TWPE in this table.

5.5.3 Iron and Steel Manufacturing Category Fluoride Discharges in DMR

EPA's investigation of fluoride discharges in this category revealed that three facilities account for approximately 73 percent of the 2011 DMR fluoride discharges from iron and steel manufacturers (shown in Table 5-37). EPA did not investigate the remaining facilities discharging fluoride as part of the 2013 Annual Review.

Table 5-37. Top 2011 DMR Fluoride Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Arcelormittal Indiana Harbor LLC	East Chicago, IN	500,000	15,000	31%
USS Gary Works	Gary, IN	339,000	10,200	21%
Weirton Steel Corporation	Weirton, WV	331,000	9,940	21%
Remaining Facilities Reporting Fluoride Discharges[a]		422,000	12,700	27%
Total		**1,590,000**	**47,800**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are fourteen remaining facilities that have fluoride discharges in the 2011 DMR data.

Fluoride is not a regulated pollutant in the Iron and Steel Manufacturing Category effluent limitations guidelines and standards (ELGs). During previous annual reviews, EPA researched treatment technologies that were capable of removing fluoride (not specific to iron and steel wastewater discharges). From this review, EPA determined that current technologies are achieving effluent fluoride concentrations between 2 mg/L and 15 mg/L (WC&E, 2006; Ionics, n.d.; GCIP, 2002). EPA used these effluent fluoride concentrations as benchmarks for initial comparison of fluoride discharges from iron and steel manufacturing facilities.

Arcelormittal Indiana Harbor LLC

Arcelormittal Indiana Harbor LLC (Arcelormittal) in East Chicago, IN, discharges fluoride from outfalls 009, 010, and 011. In reviewing the facility's 2011 DMR fluoride concentrations, EPA noted that the May 2011 fluoride concentration from Outfall 010 was 100 times higher than the other concentrations from that outfall, and from the other outfalls. As shown in Table 5-17, EPA assumed that the reported concentration was in error and corrected the concentration from this outfall. This correction decreased the facility's fluoride TWPE from 15,000 to 1,440, reducing the Iron and Steel Category's fluoride TWPE from 47,800 to 34,200, as shown in Table 5-36. Further, all of the 2011 DMR fluoride concentrations for Arcelormittal are below the comparable treatability levels achievable by current technologies.

Table 5-38. Arcelormittal's 2011 DMR Original and Corrected Fluoride Discharges

Outfall	Monitoring Period Date	Original Average Flow (MGD)	Original Average Fluoride Concentration (mg/L)	Corrected Concentration (mg/L)
009	31-Mar-2011	34.1	0.4	0.4
009	31-May-2011	34.1	0.36	0.36
009	30-Sep-2011	34.1	0.28	0.28
010	31-Mar-2011	45.1	0.46	0.46
010	31-May-2011	44.9	36	0.36
010	30-Sep-2011	44.9	0.29	0.29
011	31-Mar-2011	18.6	1.6	1.6
011	31-May-2011	32.8	0.82	0.82
011	30-Sep-2011	35.7	0.84	0.84

Source: *DMRLTOutput2011_v1*.

USS Gary Works

USS Gary Works in Gary, IN, discharges fluoride from outfalls 005, 028 and 030 to the Grand Calumet River (IDNR, 2007). Outfall 005 discharges cooling water and condensate from many operations, along with stormwater runoff (IDNR, 2007). Outfalls 028 and 030 are discharges from lagoons containing continuous caster non-contact cooling water, cooling tower blowdown, stormwater runoff, steam condensate, plate mill scale pit, slab spray cooling water, and vacuum degasser overflow. The facility's permit calls for monitoring of fluoride discharges from outfalls 005, 028, and 030, but does not include fluoride limits (IDNR, 2007).

Table 5-39 presents the facility's fluoride discharge data for 2011. EPA calculated the fluoride concentrations using the quantity and average monthly flows. The fluoride concentrations range from 0.417 mg/L to 3.77 mg/L. For its initial comparison of the discharges, EPA determined that fluoride concentrations for USS Gary Works are generally below those achievable by current technologies described above.

Table 5-39. USS Gary Works' 2011 Monthly Fluoride Discharge and Flow Data

Outfall	Monitoring Period Date	Average Flow (MGD)	Fluoride Quantity (kg/day)	Calculated Fluoride Concentrations (mg/L)
005	31-Jan-2011	51.1	82.1	0.424
005	28-Feb-2011	49.7	113	0.601
005	31-Mar-2011	46.9	82.5	0.465
005	30-Apr-2011	51.6	100	0.512
005	31-May-2011	43.5	82.5	0.501
005	30-Jun-2011	46.3	92.9	0.531
005	31-Jul-2011	48.3	94.3	0.516
005	31-Aug-2011	54.3	85.7	0.417
005	30-Sep-2011	47.7	78.4	0.434
005	31-Oct-2011	45.9	82.9	0.477
005	30-Nov-2011	42.1	83.4	0.523
005	Dec-31-2011	46.3	90.7	0.518
028	31-Jan-2011	7.2	79.3	2.91
028	28-Feb-2011	6.7	74.0	2.92
028	31-Mar-2011	7.6	84.3	2.93
028	30-Apr-2011	7	79.8	3.01
028	31-May-2011	6.7	80.2	3.16
028	30-Jun-2011	6.48	72.6	2.96
028	31-Jul-2011	5.4	77.1	3.77
028	31-Aug-2011	5.8	74.8	3.41
028	30-Sep-2011	5.6	69.8	3.29
028	31-Oct-2011	7.5	97.5	3.43
028	30-Nov-2011	6.7	73.9	2.91
028	31-Dec-2011	9.5	126	3.50
030	31-Jan-2011	19.4	210	2.86
030	28-Feb-2011	21.3	268	3.32
030	31-Mar-2011	22.8	240	2.79
030	30-Apr-2011	22.2	237	2.83
030	31-May-2011	21.1	240	3.01
030	30-Jun-2011	19.5	228	3.09
030	31-Jul-2011	17.5	244	3.69
030	31-Aug-2011	19.6	253	3.41
030	30-Sep-2011	19.0	266	3.70
030	31-Oct-2011	21.5	285	3.50
030	30-Nov-2011	21.4	254	3.13
030	31-Dec-2011	20.7	279	3.57

Source: *DMRLTOutput2011_v1*.

Weirton Steel Corporation

Weirton Steel Corporation in Weirton, WV, discharges fluoride from outfalls 003 and 004 into the Ohio River and Harmon Creek, respectively (WVDEP, 2008a). The facility discharges cooling water, stormwater runoff, and process water from both outfalls. The facility's permit calls for monitoring of fluoride discharges from outfall 003, but does not include fluoride limits (WVDEP, 2008a). The fluoride permit limit for outfall 004 is 1.4 mg/L on an average monthly basis and 2.2 mg/L daily maximum (WVDEP, 2008a).

Table 5-40 presents the facility's fluoride discharge data for 2011. As described above, EPA determined that current wastewater technologies (not specific to iron and steel) are achieving effluent fluoride concentrations between 2 mg/L and 15 mg/L. For its initial comparison, EPA determined that 2011 fluoride concentrations from outfall 004 are below the facility's permit limit and below those achievable by current technologies, as shown in Table 5-40. However, the fluoride concentrations from outfall 003 are significantly higher than outfall 004, by an order of magnitude. Additionally, the September 2011 concentration exceeds the concentration range that can be achieved by current treatment technologies, described above. Therefore, facility-specific permitting action may be appropriate to address fluoride discharges from the Weirton Steel Corporation facility.

Table 5-40. Weirton Steel Corporation's 2011 Monthly Fluoride Discharge and Flow Data

Outfall	Monitoring Period Date	Average Flow (MGD)	Fluoride Concentration (mg/L)	Facility Permit Limits	
				Monthly Average (mg/L)	Daily Maximum (mg/L)
003	31-Mar-2011	7.86	8.00	Monitoring Only	Monitoring Only
003	30-Jun-2011	11.0	8.32	Monitoring Only	Monitoring Only
003	30-Sep-2011	10.8	22.0	Monitoring Only	Monitoring Only
003	31-Dec-2011	6.50	5.82	Monitoring Only	Monitoring Only
004	31-Jan-2011	2.49	0.190	1.4	2.2
004	28-Feb-2011	2.38	0.260	1.4	2.2
004	31-Mar-2011	3.14	0.230	1.4	2.2
004	30-Apr-2011	3.37	0.320	1.4	2.2
004	31-May-2011	3.39	0.240	1.4	2.2
004	30-Jun-2011	2.47	0.507	1.4	2.2
004	31-Jul-2011	1.23	0.730	1.4	2.2
004	31-Aug-2011	1.04	0.430	1.4	2.2
004	30-Sep-2011	0.790	0.480	1.4	2.2
004	31-Oct-2011	0.580	0.530	1.4	2.2
004	30-Nov-2011	1.30	0.360	1.4	2.2
004	31-Dec-2011	1.14	0.370	1.4	2.2

Source: *DMRLTOutput2011_v1*.

5.5.4 Iron and Steel Manufacturing Category Aluminum Discharges in DMR

EPA's investigation of aluminum discharges revealed that one facility, Nucor Steel Decatur LLC (Nucor Steel) in Trinity, AL, accounts for 76 percent of the 2011 DMR aluminum discharges (shown in Table 5-41). EPA did not investigate the remaining facilities discharging aluminum as part of the 2013 Annual Review.

Table 5-41. Top 2011 DMR Aluminum Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Nucor Steel Decatur LLC	Trinity, AL	477,000	28,600	76%
Remaining Facilities Reporting Aluminum Discharges[a]		148,000	8,890	24%
Total		**625,000**	**37,500**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 17 remaining facilities that have aluminum discharges in the 2011 DMR data.

Nucor Steel discharges aluminum through ten outfalls. Outfall 002 discharges stormwater runoff from the scrap yard, north and south scrap bays, and slag yards associated with the manufacture of hot rolled steel and non-contact blowdown. Outfalls 003, 012, and 013 discharge stormwater runoff associated with the manufacture of hot rolled steel. Outfalls 004, 006, 008, and 010 discharge stormwater associated with transportation equipment parking and storage. Outfalls 007 and 011 discharge stormwater runoff, non-contact cooling water blowdown, reverse osmosis concentrate, softener backwash, and carbon filter backwash (Bullard, 2014). The facility permit calls for monitoring on a quarterly or semi-annual basis for aluminum discharges for all outfalls listed above (ADEM, 2008), but does not have aluminum limits.

Table 5-42 presents Nucor's original aluminum discharge data for 2011. As part of the 2013 Annual Review, EPA contacted Nucor Steel to confirm the aluminum discharges. The facility contact confirmed the 2011 discharges and stated that the December 2011 aluminum concentration reading for outfall 011 of 775 mg/L was taken immediately following a major precipitation event. Therefore, it did not represent typical daily discharges during the 92 day monitoring period. The facility performed additional sampling on January 26, 2012, and provided EPA a revised value of 0.463 mg/L for aluminum at outfall 011 (Bullard, 2014). EPA recalculated the facility aluminum discharge using the revised value for outfall 011. This resulted in a reduction of the facility's 2011 DMR aluminum TWPE from 28,600 to 9,530, reducing the Iron and Steel Category's aluminum TWPE from 37,500 to 18,400.

Aluminum is not a regulated pollutant in the Iron and Steel Manufacturing Category ELG. However, during the 2002 rulemaking EPA evaluated the treatment of aluminum in wastewater from steelmaking. At that time, EPA evaluated two-stage metals precipitation, which achieved a long-term average concentration (LTA) of aluminum of 0.229 mg/L (U.S. EPA, 2002, Appendix D). The facility's discharge concentrations, presented in Table 5-42, are all higher than this achievable level. Therefore, facility-specific permitting action may be appropriate to address this facility's aluminum discharges.

Table 5-42. Nucor Steel's 2011 Monthly Aluminum Concentration and Flow Data

Outfall	Monitoring Period Date	Average Flow (MGD)	Aluminum Concentration (mg/L)
002	31-Mar-2011	1.33	1.59
002	30-Jun-2011	6.61	4.99
002	30-Sep-2011	8.35	5.65
002	31-Dec-2011	1.27	0.804
003	30-Jun-2011	0.810	0.22
003	31-Dec-2011	0.780	28.4
004	31-Mar-2011	0.057	14.3
004	30-Jun-2011	0.120	24.3
004	30-Sep-2011	0.150	12.4
004	31-Dec-2011	0.060	21.5
006	31-Mar-2011	0.075	23.1
006	30-Jun-2011	0.180	0
006	30-Sep-2011	0.230	7.68
006	31-Dec-2011	0.091	10.4
007	31-Mar-2011	0.026	0.690
007	30-Jun-2011	0.052	1.49
007	30-Sep-2011	0.066	2.47
007	31-Dec-2011	0.025	0.810
008	31-Mar-2011	0.028	5.16
008	30-Jun-2011	0.056	3.68
008	30-Sep-2011	0.071	11.7
008	31-Dec-2011	0.027	9.78
010	31-Mar-2011	0.015	14.8
010	30-Jun-2011	0.030	12.2
010	30-Sep-2011	0.039	4.06
010	31-Dec-2011	0.015	4.27
011	31-Mar-2011	0.260	1.33
011	30-Jun-2011	0.670	3.58
011	30-Sep-2011	0.840	3.14
011	31-Dec-2011	0.530	775[a]
012	30-Jun-2011	0.260	1.28
012	31-Dec-2011	0.840	4.02
013	30-Jun-2011	1.44	5.69
013	31-Dec-2011	4.57	3.89

Source: *DMRLTOutput2011_v1;* Bullard, 2014.
[a] The facility contact stated that the December 2011 concentration reading for outfall 011 was taken immediately following a major precipitation event. The facility performed additional sampling on January 26, 2012, and provided a revised value of 0.463 mg/L.

5.5.5 Iron and Steel Manufacturing Category Cyanide Discharges in DMR

EPA's investigation of the cyanide discharges revealed that two facilities, USS Clairton Plant in Clairton, PA (USS Clairton Plant), and Mountain State Carbon Follansbee Plant in Follansbee, WV, account for 60 percent of the 2011 DMR cyanide discharges (shown in Table 5-43). EPA did not investigate the remaining facilities discharging cyanide as part of the 2013 Annual Review.

Table 5-43. Top 2011 DMR Cyanide Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
USS Clairton Plant	Clairton, PA	12,100	13,500	39%
Mountain State Carbon Follansbee Plant	Follansbee, WV	6,340	7,040	21%
Remaining Facilities Reporting Cyanide Discharges[a]		12,300	13,600	40%
Total		**30,700**	**34,100**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are twenty-four remaining facilities that have cyanide discharges in the 2011 DMR data.

Both of the top two facilities are cokemaking plants, i.e., they produce carbon-coke from coal for use in steelmaking. Cokemaking operations generate wastewater containing cyanide as part of the byproduct recovery process. For further information on cokemaking plants in the U.S., see section 9.4 of the 2011 Annual Review Report (U.S. EPA, 2012).

During the 2002 Iron and Steel rulemaking, EPA established production-based limits for cyanide as best available technology (BAT) for the cokemaking subcategory (40 CFR Part 420 Subpart A). The BAT production-based limits are based on an LTA of 2.965 mg/L, and a variability factor of 1.49 (U.S. EPA, 2002, Appendices D and E).

USS Clairton Plant

USS Clairton Plant discharges cyanide in cokemaking wastewater from outfall 183. This facility's cyanide discharges were also reviewed as part of the 2011 Annual Review (U.S. EPA, 2012). Table 5-44 presents U.S. Steel's 2011 monthly cyanide and flow discharge data for outfall 183. The cyanide permit limits for outfall 183 are 5.5 mg/L or 118 pounds per day (lbs/day) average monthly and 10 mg/L or 216 lbs/day daily maximum. The facility's cyanide permit limits became effective in February 2002 and were extended to cover 2011 discharges (PA DEP, 2006).

As shown in Table 5-44, the facility's discharge concentrations do not exceed permit limits and are below the LTA for cyanide calculated during the 2002 rulemaking. The facility's high cyanide TWPE is likely the result of the large amount of industrial activity at the site. This facility has historically been the top coke producer in the U.S. (U.S. EPA, 2002).

Table 5-44. USS Clairton Plant Outfall 183 2011 Monthly Cyanide and Flow Discharge Data

Monitoring Period Date	Average Cyanide Discharge (kg/day)	Average Flow (MGD)	Average Cyanide Concentrations (mg/L)	Facility Permit Limits	
				Monthly Average (mg/L)	Daily Maximum (mg/L)
31-Jan-11	9.36	2.21	1.12	5.5	10
28-Feb-11	11.1	2.47	1.19	5.5	10
31-Mar-11	12.2	2.48	1.30	5.5	10
30-Apr-11	13.6	2.6	1.38	5.5	10
31-May-11	16.3	2.46	1.75	5.5	10
30-Jun-11	13.7	2.31	1.57	5.5	10
31-Jul-11	12.3	2.43	1.34	5.5	10
31-Aug-11	11.7	2.38	1.30	5.5	10
30-Sep-11	8.94	2.26	1.05	5.5	10
31-Oct-11	23.8	2.31	2.72	5.5	10
30-Nov-11	24.1	2.47	2.58	5.5	10
31-Dec-11	23.1	2.57	2.37	5.5	10

Source: *DMRLTOutput2011_v1*; PA DEP, 2006.

Mountain State Carbon Follansbee Plant

Mountain State Carbon discharges cyanide from outfalls 005 and 205. Mountain State Carbon discharges sanitary water, cooling water, and process water from outfall 005, and treated process wastewater, ground water, and stormwater from the biological treatment plant through outfall 205.

This facility's cyanide discharges were also reviewed as part of the 2011 Annual Review (U.S. EPA, 2012). Table 5-45 presents Mountain State Carbon's 2011 DMR monthly cyanide and flow discharge data for outfalls 005 and 205. The facility's cyanide permit limits for outfall 005 are 0.0114 mg/L monthly average and 0.0284 mg/L daily maximum. These permit limitations are well below the cyanide LTA calculated during the 2002 rulemaking (2.965 mg/L). The facility's cyanide permit limits for outfall 205 are 24.5 lb/day (11.1 kg/day) monthly average and 34.9 lbs/day (15.8 kg/day) daily maximum (WVDEP, 2008b). As shown in Table 5-45, from February through June 2011, and again in December 2011, discharges of cyanide from outfall 005 exceed the facility's permit limits. However, these concentrations are not above the cyanide LTA calculated during the 2002 rulemaking. Additionally, the January 2011 and November 2011 quantity from outfall 205 exceed the mass-based facility permit limit. Therefore, facility-specific permitting or compliance action may be appropriate to address cyanide discharges from Mountain State Carbon.

Table 5-45. Mountain State Carbon's 2011 Monthly Cyanide and Flow Discharge Data

Outfall	Monitoring Period Date	Average Cyanide Discharge (kg/day)	Average Flow (MGD)	Average Cyanide Concentration (mg/L)	Facility Permit Limits		Facility Permit Limit Units
					Monthly Average	Daily Maximum	
005	31-Jan-11	0.293	8.70	0.009	0.0114	0.0284	mg/L
005	28-Feb-11	0.293	6.45	0.012[a]	0.0114	0.0284	mg/L
005	31-Mar-11	0.423	6.58	0.017[a]	0.0114	0.0284	mg/L
005	30-Apr-11	0.383	8.44	0.012[a]	0.0114	0.0284	mg/L
005	31-May-11	0.646	12.2	0.014[a]	0.0114	0.0284	mg/L
005	30-Jun-11	0.830	13.7	0.016[a]	0.0114	0.0284	mg/L
005	31-Jul-11	0.256	14.1	0.005	0.0114	0.0284	mg/L
005	31-Aug-11	0.505	14.2	0.009	0.0114	0.0284	mg/L
005	30-Sep-11	0.378	14.7	0.007	0.0114	0.0284	mg/L
005	31-Oct-11	0.509	13.3	0.010	0.0114	0.0284	mg/L
005	30-Nov-11	0.398	13.8	0.008	0.0114	0.0284	mg/L
005	31-Dec-11	2.70	10.5	0.068[b]	0.0114	0.0284	mg/L
205	31-Jan-11	12.2[a]	0.82	3.93	11.1	15.8	kg/day
205	28-Feb-11	4.17	0.87	1.27	11.1	15.8	kg/day
205	31-Mar-11	10.4	0.84	3.27	11.1	15.8	kg/day
205	30-Apr-11	3.58	0.72	1.31	11.1	15.8	kg/day
205	31-May-11	7.88	0.71	2.93	11.1	15.8	kg/day
205	30-Jun-11	3.40	0.71	1.27	11.1	15.8	kg/day
205	31-Jul-11	9.07	0.69	3.47	11.1	15.8	kg/day
205	31-Aug-11	6.62	0.74	2.36	11.1	15.8	kg/day
205	30-Sep-11	6.25	0.76	2.17	11.1	15.8	kg/day
205	31-Oct-11	4.98	0.69	1.91	11.1	15.8	kg/day
205	30-Nov-11	12.2[a]	0.73	4.42	11.1	15.8	kg/day
205	31-Dec-11	5.44	0.69	2.08	11.1	15.8	kg/day

Source: *DMRLTOutput2011_v1;* WV DEP, 2008b.
[a] Cyanide concentration or quantity exceeds monthly average permit limitation.
[b] Cyanide concentration or quantity exceeds both monthly average and daily maximum permit limitations.

5.5.6 Iron and Steel Manufacturing Category Total Residual Chlorine Discharges in DMR

EPA's investigation of total residual chlorine discharges revealed that one facility, USS Clairton Plant in Clairton, PA, accounts for 49 percent of the 2011 DMR total residual chlorine discharges (shown in Table 5-46**).** EPA did not investigate the remaining facilities discharging chlorine as part of the 2013 Annual Review.

Table 5-46. Top 2011 Total Residual Chlorine Discharging Facilities

Facility Name	Location	Total Residual Chlorine Pounds Discharged	Total Residual Chlorine TWPE	Facility Percent of Total Residual Chlorine Category TWPE
USS Clairton Plant	Clairton, PA	28,000	14,000	49%
Remaining Facilities Reporting Total Residual Chlorine Discharges[a]		29,200	14,600	51%
Total		**57,200**	**28,600**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are twenty-eight remaining facilities that have total residual chlorine discharges in the 2011 DMR data.

The USS Clairton Plant is the top cokemaking facility in the U.S. and discharges total residual chlorine in cokemaking wastewater from outfall 038. Table 5-47 presents USS Clairton's 2011 DMR monthly total residual chlorine and flow discharge for outfall 038. The chlorine permit limit for outfall 038 is 0.5 mg/L monthly average (PA DEP, 2006). As shown in Table 5-47, the facility's discharges do not exceed permit limits. Similar to the facility's cyanide discharges, discussed above, the high chlorine discharges are the result of the large amount of industrial activity at the facility.

Table 5-47. USS Clairton Plant's 2011 Monthly Total Residual Chlorine and Flow Discharge Data for Outfall 038

Monitoring Period Date	Average Flow (MGD)	Average Total Residual Chlorine Concentrations (mg/L)	Monthly Average Permit Limit (mg/L)
31-Jan-11	36.8	0.11	0.5
28-Feb-11	41.8	0.11	0.5
31-Mar-11	39.0	0.05	0.5
30-Apr-11	41.7	0.08	0.5
31-May-11	62.0	0.05	0.5
30-Jun-11	70.4	0.18	0.5
31-Jul-11	63.2	0.47	0.5
31-Aug-11	66.2	0.12	0.5
30-Sep-11	71.5	0.09	0.5
31-Oct-11	61.1	0.04	0.5
30-Nov-11	50.7	0.45	0.5
31-Dec-11	42.9	0.26	0.5

Source: *DMRLTOutput2011_v1*.

5.5.7 Iron and Steel Manufacturing Category Findings

The estimated toxicity of the Iron and Steel Manufacturing Category discharges results from fluoride, aluminum, cyanide, and total residual chlorine discharges. From the 2013 Annual Review, EPA has identified the following:

- Three facilities, Arcelormittal Indiana Harbor LLC, USS Gary Works and Weirton Steel Corporation, account for 73 percent of the category's fluoride 2011 DMR discharges. EPA determined the following:
  - — Arcelormittal Indiana Harbor LLC had an error in their 2011 DMR fluoride discharges. This correction decreased the facility's fluoride TWPE from 15,000 to 1,320, reducing the Iron and Steel Category's fluoride TWPE from 47,800 to 34,200. Fluoride discharges from outfalls 009, 010, and 011 are below comparable concentrations achieved by current treatment technologies (not specific to iron and steel manufacturing).
  - — The USS Gary Works 2011 DMR fluoride discharge data also do not exceed comparable concentrations achieved by current treatment technologies.
  - — Weirton Steel Corporation's permit calls for fluoride monitoring of two outfalls discharging fluoride; one outfall also has numeric limits. EPA found that discharge from the latter outfall, which has monitoring requirements only, may exceed the comparable concentration ranges achieved by current treatment technologies. Therefore, facility-specific permitting action may be appropriate to address fluoride discharges from the Weirton Steel Corporation facility.
- One facility, Nucor Steel Decatur LLC, contributes the majority of the aluminum discharges for the Iron and Steel Manufacturing Category. The facility confirmed the 2011 discharges, but noted that the reading from outfall 011 in December did not accurately represent the average discharge from the facility. Based on data re-submitted by Nucor Steel Decatur, EPA recalculated the 2011 aluminum loadings. This resulted in a reduction of the facility's 2011 DMR aluminum TWPE from 28,600 to 9,530, reducing the Iron and Steel Category's aluminum TWPE from 37,500 to 18,400.
- Two facilities, USS Clairton Plant and Mountain State Carbon, LLC, contribute the majority of the cyanide discharges for the Iron and Steel Manufacturing Category. EPA reviewed cyanide discharges and found:
  - — The USS Clairton Plant 2011 DMR cyanide discharge data do not exceed permit limits and are below the cyanide LTA calculated during the 2002 rulemaking. The facility's high cyanide TWPE is likely the result of the large amount of industrial activity at the facility, as they historically have been the top coke producer in the U.S.
  - — Several months of cyanide discharges from two different outfalls at Mountain State Carbon exceed the facility's mass-based permit limit; therefore facility-specific permitting action may be appropriate to address cyanide discharges from this facility.
- One facility, USS Clairton Plant, is responsible for the majority of the total residual chlorine discharges. The facility's discharge data do not exceed permit limits. Similar to cyanide discharges for USS Clairton Plant, the high chlorine

discharges are likely the result of the large flows from the facility; it is the top cokemaking facility in the U.S.

- Correcting the database errors identified during the 2013 Annual Review decreases the 2011 Iron and Steel Category TWPE from 1,220,000 to 214,000 TWPE. In addition, EPA identified several facilities for facility-specific permitting action.

5.5.8 References for Iron and Steel Manufacturing Category

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5.6 Metal Finishing (40 CFR Part 433)

During the 2012 Annual Review, EPA's review of the Targeted National Sewage Sludge Survey (TNSSS), combined with available indirect discharge data from the toxics release inventory (TRI), identified the Metal Finishing Category (40 CFR Part 433) as potentially discharging high concentrations of metals, particularly chromium, nickel, and zinc, to publicly owned treatment works (POTWs). These metals could transfer to sewage sludge and diminish its beneficial use. Further, the Metal Finishing Category ranked high, in terms of toxic-weighted pound equivalents (TWPE), in the 2013 toxicity rankings analysis (TRA). As a result, EPA is continuing a preliminary category review of this category to evaluate further the need to revise the existing effluent limitations guidelines and standards (ELGs).

5.6.1 Summary of Metal Finishing ELGs

In 1979, EPA promulgated pretreatment standards for existing sources (PSES) for the Electroplating Category (40 CFR Part 413). These standards covered only existing indirect dischargers. Subsequently, EPA built upon the 1979 electroplating regulations and promulgated ELGs for the Metal Finishing Category (40 CFR Part 433) on September 15, 1983 (48 FR 41409).

The Metal Finishing ELGs consist of one subcategory (Subpart A, "Metal Finishing Subcategory"), with limitations that apply to wastewater discharges from six metal finishing operations. The applicability is not defined by industry sector, but by the six core electroplating operations originally identified in Part 413, and 40 additional process operations (Table 5-48). In addition to best practicable control technology (BPT), best available technology economically achievable (BAT), and new source performance standards (NSPS), Part 433 includes PSES and pretreatment standards for new sources (PSNS) limitations. Table 5-49 lists the metal finishing (40 CFR Part 433) applicability, regulated pollutants, and limitations. Part 433 supersedes most of Part 413, with the exception of discharges from independent job shops and printed circuit board manufacturers. Another Categorical Pretreatment Standard may cover wastewater discharges from metal finishing operations, in which case, the specific standard will apply. The following regulations take precedence over Part 433:

- Nonferrous Smelting and Refining (40 CFR Part 421);
- Coil Coating (40 CFR Part 465);
- Porcelain Enameling (40 CFR Part 466);
- Battery Manufacturing (40 CFR Part 461);
- Iron and Steel Manufacturing (40 CFR Part 420);
- Metal Casting Foundries (40 CFR Part 464);
- Aluminum Forming (40 CFR Part 467);
- Copper Forming (40 CFR Part 468);
- Plastic Molding and Forming (40 CFR Part 463);
- Electrical and Electronic Components (40 CFR Part 469); and
- Nonferrous Forming (40 CFR Part 471).

Table 5-48. Unit Operations Regulated by ELGs for the Metal Finishing Category

Six Core Electroplating Operations (Introduced in Part 413)	40 Additional Metal Processing Operations (Introduced in Part 433)	
• Electroplating	• Cleaning	• Laser Beam Machining
• Electroless Plating	• Machining	• Plasma Arc Machining
• Anodizing	• Grinding	• Ultrasonic Machining
• Coating	• Polishing	• Sintering
• Etching And Chemical Milling	• Barrel Finishing	• Laminating
• Printed Circuit Board Manufacturing	• Burnishing	• Hot Dip Coating
	• Impact Deformation	• Sputtering
	• Pressure Deformation	• Vapor Plating
	• Shearing	• Thermal Infusion
	• Heat Treating	• Salt Bath Descaling
	• Thermal Cutting	• Solvent Degreasing
	• Welding	• Paint Stripping
	• Brazing	• Painting
	• Soldering	• Electrostatic Painting
	• Flame Spraying	• Electropainting
	• Sand Blasting	• Vacuum Metalizing
	• Abrasive Jet Machining	• Assembly
	• Electrical Discharge Machining	• Calibration
	• Electrochemical Machining	• Testing
	• Electron Beam Machining	• Mechanical Plating

Table 5-49. Applicability, Regulated Pollutants, and ELG Limits for the Metal Finishing Category

Subpart	Applicability	Pollutant	BAT/PSES Daily Max (Monthly Average) (mg/L)	NSPS/PSNS Daily Max (Monthly Average) (mg/L) [a]
Subpart A – Metal Finishing Subcategory	The provisions of this subpart apply to discharges from the following six metal finishing operations on any basis material: Electroplating, Electroless Plating, Anodizing, Coating (chromating, phosphating, and coloring), Chemical Etching and Milling, and Printed Circuit Board Manufacture.[a]	Silver	0.43 (0.24)	0.43 (0.24)
		Copper	3.38 (2.07)	3.38 (2.07)
		Lead	0.69 (0.43)	0.69 (0.43)
		Cyanide	1.20 (0.65)	1.20 (0.65)
		Cadmium	0.69 (0.26)	0.11 (0.07)
		Chromium	2.77 (1.71)	2.77 (1.71)
		Nickel	3.98 (2.38)	3.98 (2.38)
		Zinc	2.61 (1.48)	2.61 (1.48)
	For industrial facilities with cyanide treatment, and upon agreement between a source subject to those limits and the pollution control authority, the following amenable cyanide limit may apply in place of the total cyanide limit.	Cyanide amenable to alkaline chlorination	0.86 (0.32)	0.86 (0.32)

Source: 40 CFR §433.10.

[a] This part does not apply to (1) metallic platemaking and gravure cylinder preparation conducted within or for printing and publishing facilities or (2) existing indirect discharging job shops and independent printed circuit board manufacturers which are covered by 40 CFR part 413.

5.6.2 History of EPA Reviews of the Metal Finishing Category

EPA first conducts a screening-level review of all categories subject to existing ELGs in its TRA. In 2009, EPA conducted a screening-level review of the Metal Finishing Category (U.S. EPA, 2009). In the 2011 Annual Review, EPA selected the Metal Finishing Category (40 CFR Part 433) for a preliminary category review because it ranked high in the point source category rankings, in terms of TWPE (U.S. EPA, 2012). EPA assigned this category lower priority for revision in the Preliminary 2012 Plan after correcting reported discharges from facilities contributing to the high TWPE (U.S. EPA, 2013).

EPA did not complete a preliminary category review of the category during the 2012 Annual Review. However, during the 2012 Annual Review, EPA identified additional data sources that suggest further review of this category (U.S. EPA, 2014). Further, the category continued to rank high in the point source category rankings in EPA's 2013 Annual Review. EPA plans to conduct a more detailed preliminary category review of the Metal Finishing Category during the 2014 Annual Review for the following reasons:

1. As part of the 2012 Annual Review (U.S. EPA, 2014), EPA reviewed the TNSSS conducted by EPA's Office of Water (OW), which measured contaminant concentrations in sewage sludge from 74 POTWs. Although the TNSSS did not specifically identify the industrial wastewater discharged to the sampled POTWs, EPA used information from TRI to examine pollutants discharged to POTWs, and explored how those pollutants might interfere with beneficial use of sewage sludge. This review suggested further investigation of pollutants discharged to POTWs by the metal finishing industry, particularly metals, including chromium, nickel and zinc, which were above the POTW sludge limits. EPA did not identify for further review any new pollutants of concern or wastewater discharges from industrial categories not currently regulated by ELGs.

   Additionally, the Metal Finishing Category (40 CFR Part 433) has 52 facilities reporting discharges to TNSSS POTWs, more than any other category. When facilities with discharges covered by Electroplating (40 CFR Part 413) are added, the two point source categories comprise nearly 50 percent of the facilities reporting discharges to the 35 TNSSS POTWs, indicating that these two categories may be primary sources of metals discharged to POTWs.

2. EPA received comments from regional EPA offices and State pretreatment coordinators regarding POTW treatability issues arising from wastewater discharges received from metal processing facilities. One such issue was that the limits for this category might be improperly applied to metals industries regulated by other ELGs that take precedence over 40 CFR Part 433.

3. EPA received comments from the Association of Clean Water Administrators (ACWA) recommending that EPA revise regulations or issue new guidance regarding pretreatment standards for the metal finishing industry because new technologies used by the industry may introduce new pollutants of concern that are not currently addressed in POTW or NPDES permits (InsideEPA, 2013). Such new technologies may also not be covered under the 46 existing metal finishing operations.

4. EPA evaluated the metal finishing industry (among other metals industries) during the development of the Metal Products and Machinery (MP&M) rule (40 CFR Part 438), promulgated in 2003. As part of the rulemaking, EPA conducted sampling episodes at 84 sites between 1986 and 2001 to obtain data on the characteristics of wastewater and solid wastes, including sites with metal finishing operations. This sampling program revealed the impact of technological advances in treating wastewater since EPA promulgated Part 433 in 1983. Table 5-50 compares the maximum monthly average effluent limits established by the 1983 Metal Finishing ELGs with the limits observed for the metal finishing industry during the MP&M rule development (covered by four subcategories in 40 CFR Part 438). EPA proposed these limits in 2001, but they were not promulgated.

5. As outlined in the 2012 Annual Review Report (U.S. EPA, 2012), EPA is collecting data on new treatment technologies used to treat metals in industrial wastewater and is evaluating newer treatment performance levels to supplant the limits established by the Metal Finishing ELGs in 1983. From a preliminary comparison, it appears that treatment technologies developed after 1983 can reduce metals in wastewater to significantly lower levels than technologies that were available when the 1983 ELGs were developed.

Table 5-50. Maximum Monthly Average Effluent Limits of Part 413, Part 433, and Proposed Part 438

Pollutant	Unit	40 CFR Part 413[a]		40 CFR Part 433[b]		40 CFR Part 438[c]			
		>10,000 gpd	<10,000 gpd	NSPS & PSNS	PSES	General Metals	MF Job Shops	Non-Cr Anodizing	Printed Wiring Board
TSS	mg/L					18	31	31	31
Oil and Grease	mg/L					12	26	26	26
TOC	mg/L					50	59		67
Total organics parameter	mg/L					4.3	4.3		4.3
Total Metals	mg/L	5.0							
Aluminum	mg/L								4.0
Cadmium	mg/L	0.5	0.5	0.07	0.26	0.09	0.09		
Chromium	mg/L	2.5		1.71	1.71	0.14	0.55		0.14
Copper	mg/L	1.8		2.07	2.07	0.28	0.57		0.28
Total Cyanide	mg/L	0.23		0.65	0.65	0.13	0.13		0.13
Amenable Cyanide	mg/L		1.5	0.32	0.32	0.07	0.07		0.07
Lead	mg/L	0.3	0.3	0.43	0.43	0.03	0.09		0.03
Manganese	mg/L					0.09	0.10	0.09	0.64
Molybdenum	mg/L					0.49	0.49		
Nickel	mg/L	1.8		2.38	2.38	0.31	0.64	0.31	0.14
Silver	mg/L	0.5 [d]		0.24	0.24	0.09	0.06		

Table 5-50. Maximum Monthly Average Effluent Limits of Part 413, Part 433, and Proposed Part 438

		40 CFR Part 413[a]		40 CFR Part 433[b]		40 CFR Part 438[c]			
Pollutant	**Unit**	**>10,000 gpd**	**<10,000 gpd**	**NSPS & PSNS**	**PSES**	**General Metals**	**MF Job Shops**	**Non-Cr Anodizing**	**Printed Wiring Board**
Sulfide, Total	mg/L					13	13		13
Tin	mg/L					0.67	1.4		0.14
Zinc	mg/L	1.8		1.48	1.48	0.22	0.17	0.22	0.22

Sources: U.S. EPA, 1979; U.S. EPA, 1983; U.S. EPA 2000.
Gray highlighting indicates no limits were set for the pollutant.
[a] EPA established discharge limits based on a wastewater production threshold of 10,000 gallons per day (gpd).
[b] NSPS – New Source Performance Standards; PSNS – Pretreatment Standards for New Sources; PSES – Pretreatment Standards for Existing Sources.
[c] Part 438 developed proposed limits for 8 subcategories, of which 4 subcategories are relevant to the metal finishing industry: General Metals, Metal Finishing (MF) Job Shops, Non-chromium (Non-Cr) Anodizing, and Printed Wiring Board.
[d] The silver pretreatment standard applies only to Subpart B, precious metals plating.

Although EPA has not revised the Part 433 ELGs since 1983, the Agency has reviewed annual discharge data as part of the 304m review process. Table 5-51 compares the top three pollutants with the highest contribution to the 2011 DMR TWPE (PCB-1248, copper, and cyanide) and shows the 2009 DMR TWPE for these top pollutants based on the results of the 2011 Annual Review (U.S. EPA, 2012). The top three pollutants contribute 45 percent of the total 2011 DMR TWPE.

Table 5-52 shows that the top three pollutants, copper and copper compounds, lead and lead compounds, and silver and silver compounds, contribute 69 percent of the total 2011 TRI TWPE. For comparison, the table shows the 2009 TRI TWPE for these top pollutants, based on the results of the 2011 Annual Review (U.S. EPA, 2012).

EPA's review of the TNSSS identified chromium, nickel, and zinc as the top pollutants of concern at POTWs, which are most likely contributed by metal finishing facilities. The top pollutants identified in the DMR and TRI data indicate additional pollutants that do not overlap with EPA's review of the TNSSS data. Further review is warranted to understand more fully the pollutants of concern for the Metal Finishing Category.

Table 5-51. Metal Finishing Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]		2009 DMR Data[a]
	Number of Facilities Reporting Pollutant [b]	TWPE	TWPE
PCB-1248	2	44,200	24,200
Copper	243	40,200	9,400
Cyanide	68	35,500	39,400
Top Pollutant Total	**NA**	**120,000**	**73,000**
Metal Finishing Category Total	**626**	**265,000**	**197,000**

Sources: *DMRLoads2009_v2*; *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Number of DMR facilities reporting TWPE greater than zero.

Table 5-52. Metal Finishing Category Top TRI Pollutants

Pollutant	2011 TRI Data		2009 TRI Data
	Number of Facilities Reporting Pollutant [a]	TWPE	TWPE
Copper and Copper Compounds	1,540	13,600	12,900
Lead and Lead Compounds	2,256	11,100	10,700
Silver and Silver Compounds	27	10,800	41,700
Top Pollutant Total	**NA**	**35,500**	**65,300**
Metal Finishing Category Total	**1,785**	**51,700**	**86,100**

Sources: *TRIReleases2009_v2; TRILTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] Number of facilities reporting TWPE greater than zero.

For the continuing preliminary review of the Metal Finishing Category, EPA plans to:

- Collect updated industry information on the number of facilities (including indirect dischargers and small businesses) and how metal finishing operations and processes currently employed by the industry compare to the operations and processes used in 1983.
- Review data collected during the development of the MP&M ELGs to profile the metal finishing industry, further evaluate the proposed limits for metal finishing operations, and to review the POTW survey results for additional metals concentration data from POTWs that receive wastewater from metal finishing operations.
- Continue to analyze trends in DMR and TRI data to identify pollutants of interest.
- Review data from other EPA and government programs or industry sources (e.g., regional EPA pretreatment programs, ACWA) to understand changes in technologies and identify potential new pollutants of concern.

- Review new information on treatment technology performance to determine which technologies, if any, can reduce pollutants in metal finishing wastewater to concentrations lower than the Part 433 ELGs.

EPA will use the findings from the preliminary category review to identify:

- Additional data needs for this industry, including information on industry economics and potential environmental impacts of current discharges.
- Metal finishing operations that are not covered by the 46 existing unit operations.
- Pollutants present in metal finishing wastewater that may not be included in the ELGs and that may warrant further study.
- Alternative manufacturing operations or chemistries that reduce or eliminate pollutant discharges.
- Current best available treatment technologies for removing pollutants from metal finishing wastewater.

5.6.3 References for Metal Finishing Category

1. Inside EPA. 2013. States Say 'Green' Metal Finishing Technology Requires New Effluent Limitations Guidelines Guide. InsideEPA.com. Doc ID: 2440462. (July 16). EPA-HQ-OW-2014-0170. DCN 07870.

2. U.S. EPA. 1979. Development Document for Existing Source Pretreatment Standards for the Electroplating Point Source Category. Washington, D.C. (August). EPA-HQ-OW-2014-0170. DCN 07871.

3. U.S. EPA. 1983. Federal Register Notice: Electroplating and Metal Finishing Point Source Categories; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards. Washington, D.C., (July 15). EPA-HQ-OW-2014-0170. DCN 07868.

4. U.S. EPA. 2000. Development Document for the Proposed Effluent Limitations Guidelines and Standards for the Metal Products & Machinery Point Source Category. Washington, D.C. (December). EPA-HQ-OW-2014-0170. DCN 07869.

5. U.S. EPA. 2009. *Technical Support Document for the Preliminary 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-09-006. EPA-HQ-OW-2008-0517-0515.

6. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December) EPA-821-R-12-001. EPA-HQ-OW-2010-0824-0195.

7. U.S. EPA, 2013. *Preliminary 2012 Effluent Guidelines Program Plan.* Washington, D.C. (May). EPA-HQ-OW-2010-0824. DCN 07684.

8. U.S. EPA. 2014. *The 2012 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-004. EPA-HQ-OW-2010-0824. DCN 07933.

5.7 Nonferrous Metals Manufacturing (40 CFR Part 421)

EPA selected the Nonferrous Metals Manufacturing (NFMM) Category for preliminary review because it continues to rank high, in terms of toxic-weighted pound equivalents (TWPE), in the point source category rankings. EPA reviewed discharges from the NFMM Category as part of the 2004, 2006, 2007, 2009, and 2011 reviews (U.S. EPA, 2004, 2006, 2007, 2009, 2012). This section summarizes the results of the 2013 Annual Review associated with the NFMM Category. EPA focused on discharges of cadmium, copper, mercury, polychlorinated biphenyls (PCBs), and lead from discharge monitoring reports (DMR) because of their high TWPE relative to other pollutants in the NFMM Category. Cadmium, mercury, and lead, reviewed as part of the 2011 Annual Review, continue to be top pollutants of concern. For the 2013 Annual Review, available discharge data also showed significant contributions of copper and PCBs to the NFMM Category TWPE.

5.7.1 NFMM Category 2013 Toxicity Rankings Analysis

Table 5-35 compares the toxicity rankings analysis (TRA) results for the NFMM Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review as discussed in the Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans (U.S. EPA, 2014). As discussed below, EPA's review of the NFMM Category identified a data error that affected the 2011 DMR data and TWPE. The bottom row of Table 5-35 shows the corrected data resulting from this review.

Table 5-53. NFMM Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

Year of Discharge	Year of Review	NFMM Category Facility Counts			NFMM Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total TWPE
2009[d]	2011	121	29	19	40,500	160,000	201,000
2011	2013	119	28	23	42,900	383,000	426,000
2011[e]	2013				42,900	330,000	373,000

Sources: 2011 Annual Review Report (for 2009[d] DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities are reporting facilities and contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.
[e] 2011 data after corrections made during the 2013 Annual Review.

As shown in Table 5-35, the total TWPE (incorporating data corrections) has increased from 2009 to 2011. During that period, the number of TRI facilities and minor DMR facilities decreased, while the number of major DMR facilities increased.

5.7.2 NFMM Category Pollutants of Concern

For its 2013 Annual Review, EPA's review of the NFMM Category focused on the 2011 DMR discharges because the 2011 DMR data account for 90 percent of the category's combined TWPE. Table 5-54 lists the five pollutants with the highest contribution to the 2011 DMR TWPE. Table 5-54 also presents the 2011 DMR TWPE after EPA corrected an error identified in this preliminary category review (discussed in the sections below). In addition, as a point of comparison, Table 5-54 shows the 2009 DMR TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012).

Cadmium, copper, mercury, PCBs, and lead contribute more than 82 percent of the total 2011 category DMR TWPE. EPA's investigations of reported discharges of the top five pollutants are presented in Section 5.7.3 to 5.7.7. EPA did not investigate the other pollutants as part of the 2013 Annual Review because they account only 18 percent of the 2011 DMR TWPE for the NFMM Category.

Table 5-54. 2011 NFMM Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
Cadmium	9	114,000	114,000	22,900
Copper	22	60,300	7,380	754
Mercury	6	59,200	59,200	29,100
PCBs	2	59,100	59,100	4,140
Lead	21	19,400	19,400	24,300
Top Pollutants, Total	**NA**	**312,000**	**259,000**	**81,200**
NFMM Category, Total	**55[b]**	**383,000**	**330,000**	**160,000**

Sources: *DMRLTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Number of facilities reporting TWPE greater than zero.

5.7.3 NFMM Category Cadmium Discharges in DMR

EPA's investigation of the cadmium discharges revealed that Nyrstar Clarksville Inc. (Nyrstar), in Clarksville, TN accounts for over 98 percent of the 2011 DMR cadmium compound discharges (shown in Table 5-55). EPA did not investigate the remaining facilities discharging cadmium.

Table 5-55. Top 2011 DMR Cadmium Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Nyrstar Clarksville Inc.	Clarksville, TN	4,850	112,000	98%
Remaining Facilities Reporting Cadmium[a]		98.4	2,270	2%
Total		**4,950**	**114,000**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are eight remaining facilities that have cadmium discharges in the 2011 DMR data.

Nyrstar produces zinc metal from beneficiation of zinc concentrate ore by a hydrometallurgical process. As secondary products, this facility also co-produces cadmium metal, sulfuric acid, and metallurgically valuable byproducts (TN DEC, 2005). Nyrstar discharges cadmium from outfalls 001, SW3, SW4, and SW5. Outfall 001 discharges treated process wastewater, sanitary wastewater, and cooling water (TN DEC, 2006). Outfalls SW3, SW4, and SW5 discharge stormwater runoff from the main production area, materials handling areas, and ancillary facility areas, respectively (Crocker, 2014).

As part of the 2013 Annual Review, EPA contacted Nyrstar about the cadmium discharges; the facility contact confirmed the 2011 flow rates and concentrations. Table 5-56 presents Nyrstar's 2011 cadmium concentrations, along with the average monthly flow for the four outfalls. Because the facility reported a cadmium quantity in kilograms per day (kg/day) for outfall 001, EPA calculated the concentrations using the pollutant load discharged and the average monthly flow. The 2011 quantities discharged from outfall 001 range from 0.16 to 0.68 kg/day. The facility's permit limits cadmium for outfall 001 at 0.798 kg/day monthly average and 1.99 kg/day daily maximum. It does not limit cadmium discharges for outfalls SW3, SW4, and SW5 (TN DEC, 2006), but requires monitoring. As shown in Table 5-56, 2011 cadmium concentrations for outfall 001 are below the facility's permit limits.

Table 5-56. Nyrstar's 2011 DMR Monthly Cadmium Discharges

Outfall	Date	Quantity (kg/day)	NPDES Monthly Average Permit Limit (kg/day) [a]	Flow (MGD)	Concentration (mg/L)
001	31-Jan-11	0.470	0.798	0.590	0.210
001	28-Feb-11	0.580	0.798	0.740	0.207
001	31-Mar-11	0.440	0.798	0.804	0.145
001	30-Apr-11	0.680	0.798	0.806	0.223
001	31-May-11	0.560	0.798	0.820	0.180
001	30-Jun-11	0.430	0.798	0.720	0.158
001	31-Jul-11	0.204	0.798	0.170	0.317
001	31-Aug-11	0.160	0.798	0.140	0.302
001	30-Sep-11	0.410	0.798	0.690	0.157
001	31-Oct-11	0.650	0.798	0.610	0.282
001	30-Nov-11	0.290	0.798	0.605	0.127
001	31-Dec-11	0.190	0.798	0.660	0.076

Table 5-56. Nyrstar's 2011 DMR Monthly Cadmium Discharges

Outfall	Date	Quantity (kg/day)	NPDES Monthly Average Permit Limit (kg/day) [a]	Flow (MGD)	Concentration (mg/L)
SW3	31-Mar-11	NR	Monitoring only	0.320	0.510
SW3	30-Jun-11	NR	Monitoring only	0.083	0.330
SW3	30-Sep-11	NR	Monitoring only	0.940	2.05
SW3	31-Dec-11	NR	Monitoring only	0.640	1.90
SW4	31-Mar-11	NR	Monitoring only	0.204	0.290
SW4	30-Jun-11	NR	Monitoring only	0.039	0.980
SW4	30-Sep-11	NR	Monitoring only	0.490	1.57
SW4	31-Dec-11	NR	Monitoring only	0.430	0.025
SW5	30-Jun-11	NR	Monitoring only	1.77	0.025
SW5	31-Dec-11	NR	Monitoring only	4.28	0.180

Sources: *DMRLTOutput2011_v1;* TN DEC, 2006.
NR: Not reported.
[a] Indicates limits that were in effect when 2009 and 2011 discharge data were submitted.

Nyrstar was issued a new permit, which took effect January 2012. The revised permit set a daily maximum cadmium limit of 0.0159 milligrams per liter (mg/L) for outfalls SW3, SW4, and SW5, with a quarterly monitoring requirement (but no monthly average limit); it adjusted the limit for cadmium discharges from outfall 001 to 1.03 kg/day monthly average and 2.4 kg/day daily maximum. The cadmium limits for outfall 001 were revised based on additional site information, further insight on the facility's operation/performance, and a revised best professional judgment determination (TN DEC, 2011). EPA anticipates that the facility's new permit limits for the stormwater outfalls will result in a reduction in cadmium discharges and associated TWPE from this facility; therefore, further review of the NFMM Category's cadmium discharges is not warranted at this time.

5.7.4 NFMM Category Copper Discharges in DMR

EPA's investigation of the copper discharges revealed that Alcoa World Alumina LLC (Alcoa), in Point Comfort, TX accounts for over 88 percent of the 2011 DMR copper discharges (shown in Table 5-57). EPA did not investigate the remaining facilities discharging copper.

Table 5-57. Top 2011 DMR Copper Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Alcoa World Alumina, LLC	Point Comfort, TX	84,100	53,000	88%
Remaining Facilities Reporting Copper[a]		11,700	7,370	12%
Total		**95,800**	**60,300**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 21 remaining facilities that have copper discharges in the 2011 DMR data.

Alcoa discharges copper from three outfalls. As part of the 2013 Annual Review, EPA compared discharge concentrations for all outfalls and identified a unit error for the June 2011 copper concentration for outfall 015. Table 5-58 presents Alcoa's original and corrected average copper concentrations along with the average flow values for the three outfalls. With the corrected discharge concentrations incorporated, Alcoa's copper TWPE decreases from 53,000 to 7.19, reducing the NFMM Category's copper TWPE from 60,300 to 7,380, as shown in Table 5-54.

Table 5-58. Alcoa's 2011 DMR Original and Corrected Monthly Copper Discharges

Outfall	Monitoring Period Date[a]	Average Flow (MGD)	Original Copper Concentration (mg/L)	Corrected Copper Concentration (mg/L)
006	28-Feb-11	0.77	0.0039	0.0039
006	30-Apr-11	0.018	0.0065	0.0065
008	31-Jan-11	0.0017	0	0
008	28-Feb-11	0.013	0.014	0.014
008	31-Mar-11	0.0012	0.019	0.019
008	31-May-11	0.0013	0	0
008	30-Jun-11	0.0005	0.015	0.015
008	31-Jul-11	0.0008	0.14	0.14
008	30-Sep-11	0.001	0.074	0.074
008	31-Oct-11	0.001	0.022	0.022
008	30-Nov-11	0.000062	0.041	0.041
008	31-Dec-11	0.00026	0.11	0.11
015	31-Jan-11	0.15	0.0068	0.0068
015	28-Feb-11	0.021	0	0
015	31-May-11	0.016	0	0
015	30-June-11	0.52	642	0.0642
015	30-Sep-11	0.063	0.012	0.012
015	31-Oct-11	0.072	0.094	0.094

Source: *DMRLTOutput2011_v1*.
[a] The facility reported no flow for January, March, May, June, July, August, September, October, November, or December 2011 from Outfall 006; April or August 2011 from Outfall 008; or March, April, July, August, November, or December 2011 from Outfall 115. Therefore, copper concentrations were not reported for those months.

5.7.5 NFMM Category Mercury Discharges in DMR

EPA's investigation of the mercury discharges revealed that Alabama State Docks–Mud Lakes, (AL State Docks), in Mobile, AL accounts for over 99 percent of the 2011 DMR mercury discharges (shown in Table 5-59). EPA did not investigate the remaining facilities discharging mercury.

Table 5-59. Top 2011 DMR Mercury Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Alabama State Docks–Mud Lakes	Mobile, AL	499	58,500	99%
Remaining Facilities Reporting Mercury Discharges[a]		6.16	721	1%
Total		**505**	**59,200**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are five remaining facilities that have mercury discharges in the 2011 DMR data.

EPA reviewed the mercury discharges from AL State Docks as part of the 2010 and 2011 Annual Review (U.S. EPA, 2011, 2012). As discussed in the 2010 Annual Review, AL State Docks is a dock that serves as a transfer station for bulk cargo that is exported and imported. The site contains former aluminum ore tailings lakes, now used to accumulate and treat aluminum ore tailings leachate before discharge to the Mobile River. The site is not an industrial manufacturing site (U.S. EPA, 2011). EPA determined that the facility's discharges result from the aluminum ore tailings lakes, not current manufacturing. EPA verified the facility's 2008 mercury discharges of 25,900 TWPE; the 2011 discharge data are similar in order of magnitude. Because the facility no longer operates as an aluminum ore mine and processing facility and the discharges are similar to those in previous years, facility-specific permitting action may be appropriate to address this facility's mercury discharges.

5.7.6 NFMM Category PCB Discharges in DMR

EPA's investigation of the PCB discharges revealed that U.S. Enrichment Corporation–Paducah Gaseous Diffusion Plant (U.S. Enrichment Corp.), in Paducah, KY accounts for 96 percent of the 2011 DMR PCB discharges (shown in Table 5-60). Only two facilities have 2011 DMR PCB discharges; the other was Alcoa Lafayette Operations, which EPA did not investigate as part of the 2013 Annual Review because it contributes only 4 percent of PCB TWPE in the NFMM Category.

Table 5-60. Top 2011 DMR PCB Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
U.S. Enrichment Corp. – Paducah Gaseous Diffusion Plant	Paducah, KY	1.67	56,700	96%
Alcoa Lafayette Operations	Lafayette, IN	0.0686	2,330	4%
Total		**1.74**	**59,100**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.

U.S. Enrichment Corp. is a large uranium enrichment facility currently owned by the U.S. Department of Energy. The facility opened in 1952, and its enrichment operations ceased in 2013. The plant produced low-enriched-uranium fuel for commercial nuclear power plants in the U.S. and around the world (USEC, 2014). The site was listed on the National Priorities List as a

Superfund site in 1994. EPA has been working with federal and state partners to clean up the site since the late 1980s, and expects the process to take many more years (U.S. EPA, 2013).

U.S Enrichment Corp. discharges PCBs from outfalls 002, 009, 010, 011, and 012. PCB discharges from outfalls 002, 010, 011, and 012 are generated from stormwater runoff and onsite uranium enrichment processes and are discharged to Little Bayou Creek. Discharges from outfall 009 are generated from stormwater runoff combined with cooling water and are discharged to Big Bayou Creek. The facility permit does not set a limit for PCB discharges, but requires monitoring for the five outfalls (KY DEP, 1998). Table 5-61 presents the facility's PCB discharge flow rates and concentrations for 2011. EPA contacted the Kentucky Department of Environmental Protection, which verified the facility's PCB discharges. As shown, the PCB concentrations range from 0.00019 to 0.0014 mg/L.

U.S. Enrichment Corp. shut down its uranium enrichment process in 2013, and EPA has been working to clean up the site for many years. Therefore, the facility's PCB discharges are likely not representative of other facilities in the category, and EPA is not performing further review of PCB discharges from this facility at this time.

Table 5-61. U.S. Enrichment Corporation's 2011 PCB Discharge and Flow Data

Outfall	Monitoring Period Date	Average Flow (MGD)	PCB Concentration (mg/L)
002	31-Mar-2011	2.60	0.0014
009	30-Apr-2011	1.29	0.00019
010	30-Apr -2011	0.680	0.00033
011	28-Feb-2011	1.60	0.00029
011	31-Mar -2011	0.760	0.00048
011	31-Jul-2011	0.010	0.0002
012	31-Mar -2011	2.60	0.00053

Source: *DMRLTOutput2011_v1*.

5.7.7 NFMM Category Lead Discharges in DMR

EPA's investigation of the lead discharges revealed that Nyrstar Clarksville Inc. (Nyrstar), Clarksville, TN and Sanders Lead Company, Troy, AL account for 93 percent of the 2011 DMR lead discharges (shown in Table 5-62). EPA did not investigate the remaining facilities discharging lead.

Table 5-62. Top 2011 DMR Lead Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Nyrstar Clarksville Inc.	Clarksville, TN	5,400	12,100	62%
Sanders Lead Company Inc.	Troy, AL	2,690	6,020	31%
Remaining Facilities Reporting Lead[a]		568	1,270	7%
Total		**8,660**	**19,400**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] 18 remaining facilities reported lead discharges in the 2011 DMR data.

Nyrstar Clarksville, Inc.

Manufacturing and outfall information for Nyrstar is summarized in Section 5.7.3 as part of the cadmium discussion. Nyrstar discharges lead from outfalls SW3, SW4, and SW5 (Crocker, 2014). Discharges from these outfalls are the result of stormwater runoff from the main production area, materials handling areas, and ancillary facility areas, respectively. As part of the 2013 Annual Review, EPA contacted Nyrstar about the lead discharges from these outfalls; the facility contact confirmed the 2011 lead discharge flow rates and concentrations. Table 5-63 presents Nyrstar's 2011 lead concentrations along with the average monthly flow for the stormwater outfalls.

Table 5-63. Nyrstar's 2011 DMR Monthly Lead Discharges

Outfall	Date	Concentration (mg/L)	Flow (MGD)
SW3	31-Mar-11	0.170	0.320
SW3	30-Jun-11	0.050	0.083
SW3	30-Sep-11	2.39	0.940
SW3	31-Dec-11	0.350	0.640
SW4	31-Mar-11	1.60	0.204
SW4	30-Jun-11	3.54	0.039
SW4	30-Sep-11	3.95	0.490
SW4	31-Dec-11	0.050	0.430
SW5	30-Jun-11	0.050	1.77
SW5	31-Dec-11	0.220	4.28

Source: *DMRLTOutput2011_v1*.

At the time of discharge in 2011, the facility's permit did not include lead discharge limits for outfalls SW3, SW4, and SW5 (TN DEC, 2006). In January 2012, a new permit took effect, setting a daily maximum of 0.156 mg/L for outfalls SW3, SW4, and SW5 with quarterly monitoring required (but no monthly average limit) (TN DEC, 2011). Lead discharges at this facility are now regulated by the updated permit limits. Because lead limits have been added to the most recent facility permit, EPA expects that lead discharges from the stormwater outfalls at this facility will decrease on future DMRs.

Sanders Lead Company, Inc.

Sanders Lead Company Inc. in Troy, AL, is a secondary lead smelting plant that recycles lead-acid batteries. The wastes are recycled to recover the lead (Rutherford, 2013). Sanders Lead Company discharges wastewater from two outfalls, 003 and 004. Outfall 003 discharges stormwater runoff from maintenance areas and roof drains from the lead smelting plant; outfall 004 discharges stormwater runoff from non-process portions of the lead smelting operation (ADEM, 2008).

As part of the 2013 Annual Review, EPA contacted the facility about their lead discharges. The facility contact provided 2012 and 2013 lead concentration information (Rutherford, 2013). Table 5-64 presents Sanders Lead Company's 2011, 2012, and 2013 bi-annual lead concentration information for outfalls 003 and 004. As shown, 2012 and 2013 lead concentrations are lower than 2011 lead concentrations.

Table 5-64. 2011, 2012, and 2013 Lead Discharges from Sanders Lead Company, Inc.

Date	Outfall	Concentration (mg/L)	Flow (MGD)
30-Jun-11	003	0.019	1.69
31-Dec-11	003	0.034	7.3
30-Jun-12	003	0.0054	1.9
31-Dec-12	003	0.012	5.9
30-Jun-13	003	<0.002	3.3
30-Jun-11	004	0.0089	10.7
31-Dec-11	004	0.03	45.9
30-Jun-12	004	0.0052	11.9
31-Dec-12	004	0.009	37.7
30-Jun-13	004	<0.002	20.1

Source: *DMRLTOutput2011_v1*.

The facility contact explained the decrease in lead concentrations was due to a number of improvements to the facility's particulate and stormwater containment capabilities (Rutherford, 2013):

- Performing operations indoors, self-enclosed, and under negative pressure.
- Construction of a new vehicle maintenance shop and machinery fabrication shop to eliminate the potential for tracking metal constituents.
- Sweeping of the internal roadway to remove dust, dirt and debris.
- Replacement of asphalt pavement with new concrete in major traffic roadways to ensure more effective sweeping.

The facility's permit requirement only requires that they report lead discharges. It does not establish a limit. Based on the decreasing lead concentrations, EPA does not consider lead discharges from this facility to be a priority for further review.

5.7.8 NFMM Category Findings

The estimated toxicity of the NFMM Category discharges resulted from DMR cadmium, copper, mercury, PCBs, and lead discharges. From the 2013 Annual Review, EPA has identified the following:

- One facility, Nyrstar Clarksville Inc., contributes the majority of the cadmium discharges to the 2011 DMR data. This facility was issued a new permit in 2012 to control cadmium discharges from its stormwater outfalls and further review from EPA is not warranted at this time.
- One facility, Alcoa World Alumina, contributes the majority of the copper discharges to the 2011 DMR data. In reviewing the facility discharge information, EPA found an error in the concentrations reported for the facility. Correcting the data resulted in a reduction in the NFMM Category's copper TWPE from 60,300 to 7,380.

- One facility, AL State Docks, contributes the majority of the mercury discharges to the 2011 DMR data. EPA reviewed these discharges as part of the 2010 and 2011 Annual Reviews and determined that they result from former aluminum ore tailings lakes, not from current manufacturing. Because the facility no longer operates as an aluminum ore mine and processing facility and the discharges are similar to those in previous years, facility-specific permitting action may be appropriate to address this facility's mercury discharges.
- One facility, the U.S. Enrichment Corporation–Paducah Gaseous Diffusion Plant, contributes the majority of the PCB discharges to the 2011 DMR data. This facility shut down its uranium enrichment process in 2013, and cleanup efforts have been active at the site since the late 1980s. For these reasons, EPA is not performing further review of PCB discharges from this facility at this time.
- Two facilities, Nyrstar Clarksville Inc. and Sanders Lead Company, contribute the majority of the lead discharges to the 2011 DMR data. Nyrstar was issued a new permit in 2012, and further review from EPA is not warranted at this time. EPA determined that new containment technology and better management practices at Sanders Lead Company facility have allowed steady reductions in the concentration of lead discharges.
- Correcting the reporting errors identified during the 2013 Annual Review decreases the 2011 NFMM Category TWPE from 426,000 to 373,000. The total TWPE, incorporating data corrections, increased from 201,000 in 2009 to 373,000 in 2011, while the number of facilities reporting discharges stayed about the same. However, for the majority of the top pollutants, one or two facilities contribute a majority of the TWPE. EPA has determined that those facilities either warrant individual permitting action or have already received revised permit limits that will reduce wastewater discharges in the future. A category-wide discharge issue, warranting an effluent guidelines revision, is not apparent.

5.7.9 References for NFMM Category

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5.8 Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR Part 414)

EPA selected the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) Category for preliminary review because it continues to rank high, in terms of toxic-weighted pound equivalents (TWPE), in point source category rankings. EPA reviewed discharges from the OCPSF Category as part of the 2004 through 2011 reviews (U.S. EPA, 2004, 2005a, 2005b, 2006, 2007, 2008, 2009a, 2011, 2012). This section summarizes the results of the 2013 Annual Review pertaining to the OCPSF Category. EPA focused on discharges of hexachlorobenzene, total residual chlorine, and polychlorinated biphenyls (PCBs) because of their high TWPE relative to other pollutants in the OCPSF Category. Hexachlorobenzene, reviewed as part of the 2011 Annual Review, continues to be a top pollutant of concern. For the 2013 Annual Review, available discharge data also showed significant contributions of total residual chlorine and PCBs to the OCPSF Category TWPE.

5.8.1 OCPSF Category 2013 Toxicity Rankings Analysis

Table 5-65 compares the toxicity rankings analysis (TRA) results for the OCPSF Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review as discussed in the *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans* (U.S. EPA, 2014). As discussed in this section, EPA's review of the OCPSF Category identified several data errors that affected the 2011 DMR data and TWPE. The bottom row of Table 5-65 shows the corrected data resulting from this review.

Table 5-65. OCPSF Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

		OCPSF Category Facility Counts			OCPSF Category TWPE		
Year of Discharge	**Year of Review**	**Total TRI Facilities**	**Total DMR Major Facilities**	**Total DMR Minor Facilities[a]**	**TRI TWPE[b]**	**DMR TWPE[c]**	**Total TWPE**
2009[d]	2011	671	169	150	146,000	491,000	637,000
2011	2013	631	165	180	148,000	1,540,000	1,690,000
2011[e]	2013				148,000	658,000	806,000

Sources: 2011 Annual Review Report (for 2009[d] DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.
[e] 2011 data after corrections made during the 2013 Annual Review.

As shown in Table 5-65, the total TWPE (incorporating data corrections) has increased from 2009 to 2011. During that period, the number of TRI and minor DMR facilities decreased, the number of major DMR facilities increased.

5.8.2 OCPSF Category Pollutants of Concern

For its 2013 Annual Review, EPA's review of the OCPSF Category focused on the 2011 DMR discharges because the 2011 DMR data dominate the category's combined TWPE. Table 5-66 compares the five pollutants with the highest contribution to the 2011 DMR TWPE. It also presents the 2011 DMR TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). In addition, as a point of comparison, Table 5-66 shows the 2009 DMR TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012).

Hexachlorobenzene, total residual chlorine, and PCBs contribute more than 65 percent of the total 2011 DMR TWPE. EPA's investigations of reported discharges of the top three pollutants are presented in Sections 5.8.3 to 5.8.5. EPA did not investigate the other top pollutants as part of the 2013 Annual Review (i.e., mercury and lead), because they represent less than 35 percent of the 2011 DMR TWPE for the OCPSF Category.

Table 5-66. OCPSF Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
Hexachlorobenzene	11	689,000	61,800	81,300
Total Residual Chlorine	110	169,000	59,500	75,800
PCBs	1	147,000	0	0
Lead	51	114,000	114,000[b]	2,550
Mercury	34	110,000	110,000[b]	741
Top Pollutant Total	**NA**	**1,230,000**	**345,000**	**160,000**
OCPSF Category Total	**345[c]**	**1,540,000**	**658,000**	**491,000**

Sources: *DMRLTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Mercury and lead discharges combined contribute less than 15 percent of the 2011 category DMR TWPE. Therefore, EPA did not review mercury or lead discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.

5.8.3 OCPSF Category Hexachlorobenzene Dischargers in DMR

EPA's investigation of hexachlorobenzene discharges revealed that Honeywell International Incorporated–Hopewell (Honeywell), in Hopewell, VA, accounts for more than 91 percent of the 2011 DMR hexachlorobenzene discharges (shown in Table 5-67). EPA did not investigate the remaining facilities discharging hexachlorobenzene.

Table 5-67. Top 2011 DMR Hexachlorobenzene Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Honeywell International Incorporated - Hopewell	Hopewell, VA	322	627,000	91%
Remaining Facilities Reporting Hexachlorobenzene Discharges[a]		31.7	61,800	9%
Total		**354**	**689,000**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Values presented in the table are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.
[a] There are 10 remaining facilities that have hexachlorobenzene discharges in the 2011 DMR data.

Honeywell reported hexachlorobenzene discharges from outfall 101, which discharges contact cooling water from two barometric condensers (VA DEQ, 2008). As part of the 2013 Annual Review, EPA contacted Honeywell about the facility's hexachlorobenzene discharges. Honeywell stated that the hexachlorobenzene discharges were measured at levels below detection and confirmed that below-detection-limit (BDL) indicators were not properly marked on the DMR (Parker, 2013). As described in Section 3.2.2.2 in EPA's *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), EPA zeros the load when all concentrations of a specific pollutant are BDL for all monitoring periods (U.S. EPA, 2009b). Therefore, EPA zeroed Honeywell's hexachlorobenzene discharges, which decreases the corrected total hexachlorobenzene TWPE for the OCPSF category from 689,000 to 61,800, as shown in Table 5-66.

5.8.4 OCPSF Category Total Residual Chlorine Dischargers in DMR

EPA's investigation of the total residual chlorine discharges revealed that Celanese LTD–Bay City Plant (Celanese), in Bay City, TX, accounts for more than 65 percent of the 2011 DMR chlorine discharges (shown in Table 5-68). EPA did not investigate the remaining facilities discharging total residual chlorine.

Table 5-68. Top 2011 DMR Total Residual Chlorine Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Celanese LTD –Bay City Plant	Bay City, TX	218,000	109,000	65%
Remaining Facilities Reporting Total Residual Chlorine Discharges[a]		119,000	59,500	35%
Total		**337,000**	**169,000**	**100%**

Source: DMRLTOutput2011_v1.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 109 remaining facilities that have total residual chlorine discharges in the 2011 DMR data.

Celanese[17] discharges total residual chlorine from outfall 001. As part of the 2013 Annual Review, EPA contacted Celanese about its total residual chlorine discharges. The facility contact explained that process wastewater from the facility enters an internal domestic wastewater treatment plant and then is transferred to a permitted onsite neutral effluent treatment (NET) system via an internal outfall. Wastewater from the NET system is discharged via outfall 001 to the Colorado River. The contact explained that the facility's permit has a minimum chlorine limit of 1 milligram per liter for the internal outfall between the internal wastewater treatment plant and the NET system. The facility adds chlorine in the internal domestic wastewater treatment plant and the chlorine level must meet the minimum limit upon entering the NET system. Outfall 001 discharges treated domestic wastewater and treated process wastewater (commingled) from the facility (TCEQ, 2007). Outfall 001 does not have a chlorine limit; however, the facility is reporting the chlorine concentrations at the internal outfall as part of its DMRs. The facility is working to remove the internal outfall chlorine limit listing from the DMRs in its current permit renewal cycle to avoid further confusion (Gavranovic, 2013).

Since the total residual chlorine discharges from Celanese are from an internal outfall rather than outfall 001, EPA removed the chlorine discharges from the DMR TWPE total for this facility. With this correction, the total residual chlorine TWPE for the OCPSF category decreases from 169,000 to 59,500, as shown in Table 5-66.

5.8.5 OCPSF Category PCB Dischargers in DMR

EPA's investigation of PCB discharges revealed that Aventis Cropscience USA, in Institute, WV, accounts for 100 percent of the 2011 DMR PCB discharges (shown in Table 5-69). There were no remaining facilities discharging PCBs.

Table 5-69. 2011 DMR PCB Discharging Facility

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Aventis Cropscience USA	Institute, WV	4.31	147,000	100%

Source: *DMRLTOutput2011_v1*.

Aventis reported PCB discharges from outfall 001. As part of the 2013 Annual Review, EPA contacted Aventis about the facility's PCB discharges. Aventis stated that all PCB discharges for 2011 were measured at levels below detection and that proper BDL indicators were not marked on the DMR (Smith, 2014). As described in Section 3.2.2.2 in EPA's *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), EPA zeros the load when all concentrations of a specific pollutant are BDL for all monitoring periods (U.S. EPA, 2009b). Therefore, EPA zeroed Aventis' PCB discharges, which decreases the corrected total PCB TWPE from the OCPSF category from 147,000 to 0, as shown in Table 5-66.

[17] The facility is also referred to as OXEA Corporation, because Celanese sold parts of the company to OXEA in 2007.

5.8.6 OCPSF Category Findings

The estimated toxicity of the OCPSF Category discharges resulted from DMR hexachlorobenzene, total residual chlorine, and PCB discharges. From the 2013 Annual Review, EPA has identified the following:

- One facility, Honeywell International Incorporated, contributes the majority of the reported hexachlorobenzene discharges to the 2011 DMR data. The facility contact confirmed that BDL indicators were not properly marked on the DMR. Because all hexachlorobenzene discharges were non-detect, EPA zeroed the hexachlorobenzene load and TWPE for Honeywell. With this error corrected, the hexachlorobenzene TWPE for the OCPSF category decreased from 689,000 to 61,800.
- One facility, Celanese, contributes the majority of the total residual chlorine discharges to the 2011 DMR data. The facility contact confirmed that the total residual chlorine discharges on the 2011 DMRs are from an internal outfall, not an external outfall. Therefore, EPA removed the total residual chlorine discharges for Celanese from the TWPE total for this category. With this error corrected, the total residual chlorine TWPE for the OCPSF category decreased from 169,000 to 59,500.
- The PCB discharges are reported by one facility, Aventis Cropscience USA. The facility contact confirmed that below detection limit indicators were not properly marked on the DMR. Because all PCB discharges were non-detect, EPA zeroed the PCB load and TWPE for Aventis Cropscience. With this error corrected, the PCB TWPE for the OCPSF category decreased from 147,000 to 0.
- EPA corrected errors for discharges reported by three facilities. Correcting the errors identified during the 2013 Annual Review decreases the 2011 OCPSF Category TWPE from 1,690,000 to 806,000. The total corrected TWPE has increased from 2009 to 2011, likely a result of an increase in the number of minor discharging facilities, and thus the total number of facilities, submitting DMR data from 2009 to 2011. In addition, the total TWPE continues to remain high, which EPA attributes to the large number of facilities in the OCPSF industry.

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5.9 Petroleum Refining (40 CFR Part 419)

During the 2011 Annual Review, EPA selected the Petroleum Refining Category (40 CFR Part 419) for a preliminary review because it ranked high, in terms of toxic-weighted pound equivalents (TWPE) (U.S. EPA, 2012). At that time, EPA found that the TWPE was largely due to Toxics Release Inventory (TRI) reported discharges of dioxin and dioxin-like compounds, polycyclic aromatic compounds (PACs), and discharge monitoring report (DMR) reported discharges of sulfides, chlorine, and metals. EPA continued to review this category during the 2012 Annual Review to verify facilities' discharges and confirmed the 2011 Annual Review results. EPA also reviewed new air pollution control regulations to identify whether the regulations could result in new wastewater streams. EPA now plans to conduct a more detailed study of this industry to further investigate the findings from the 2011 and 2012 Annual Reviews.

The effluent limitations guidelines and standards (ELGs) for petroleum refining (40 CFR Part 419) were promulgated in 1982. EPA established Best Practicable Control Technology (BPT), Best Available Technology Economically Achievable (BAT), and New Source Performance Standards (NSPS) production-based mass limitations for the following pollutants:

- Ammonia as nitrogen;
- Biochemical oxygen demand;
- Chemical oxygen demand (or total organic compounds for high-chloride effluents);
- Hexavalent chromium;
- Oil and grease;
- pH;
- Phenolic compounds;
- Sulfide;
- Total chromium; and
- Total suspended solids.

As shown in the list above, only one metal (chromium) is currently regulated. EPA has not revised the ELGs since 1982, but has subsequently reviewed annual discharge data from 2004 to 2011. Table 5-1 compares the toxicity rankings analysis results for the Petroleum Refining Category from the 2011 and 2013 Annual Reviews.

Table 5-70. Petroleum Refining Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

Year of Discharge	Year of Review	Petroleum Refining Category Facility Counts			Petroleum Refining Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total TWPE
2009	2011	280	96	153	436,000	260,000	697,000
2011	2013	274	91	172	681,000	752,000	1,430,000

Sources: 2011 Annual Review Report (for 2009 DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR or TRI data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to publicly owned treatment works (POTWs). Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.

Table 5-71 presents the top five pollutants with the highest contribution to the 2011 DMR TWPE and Table 5-72 presents the top five pollutants with the highest contribution to the 2011 TRI TWPE. In addition, as a point of comparison, Table 5-71 and Table 5-72 show the 2009 DMR and TRI TWPE, respectively, for the top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012). As shown in the tables, organic compounds, such as dioxin and dioxin-like compounds and PACs, rank high in both the 2011 DMR and TRI pollutants. Mercury and mercury compounds also rank high. EPA did not review the facility-specific discharges for this industry during the 2013 Annual Review because EPA plans to conduct a more detailed study of this industry in 2014. As a result, some of the TWPE may be attributed to data errors.

Table 5-71. Petroleum Refining Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]		2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	TWPE	TWPE
Indeno(1,2,3-cd)pyrene[b]	6	280,000	256
2,3,7,8-tetrachlorodibenzo-p-dioxin	1	219,000	0.329
Methylmercury	5	77,300	306
Sulfide	63	62,400	136,000
Total Residual Chlorine	21	37,200	11,300
Top Pollutant Total	**NA**	**676,000**	**148,000**
Petroleum Refining Category Total	**263[c]**	**752,000**	**261,000**

Sources: *DMRLTOutput2011_v1* (for 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] DMR data include major and minor dischargers.
[b] Indeno(1,2,3-cd)pyrene is a PAC.
[c] Number of facilities reporting TWPE greater than zero.

Table 5-72. Petroleum Refining Category Top TRI Pollutants

Pollutant	2011 TRI Data		2009 TRI Data
	Number of Facilities Reporting Pollutant	TWPE	TWPE
Dioxin and Dioxin-Like Compounds	18	435,000	315,000
Mercury And Mercury Compounds	69	118,000	22,600
Pacs	68	42,700	35,000
Hexachlorobenzene	1	23,400	0
Nitrate Compounds	64	16,700	14,600
Top Pollutant Total	**NA**	**636,000**	**387,000**
Petroleum Refining Category Total	**274[a]**	**681,000**	**436,000**

Sources: *TRILTOutput2011_v1* (for 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
Note: Sums of individual values may not equal the total presented, due to rounding.
NA: Not applicable.
[a] Number of facilities reporting TWPE greater than zero.

EPA conducted a detailed study of this industry as part of the 2004 Final Effluent Guidelines Program Plan reviews (U.S. EPA, 2004). However, the industry has since changed. Refineries are processing heavier feedstocks (e.g., Canadian crude, tar sands), which may be a source of the increased metals in the discharges. In addition, changes in air pollution control regulations may have increased the use of wet scrubbers to control air emissions. EPA revised NSPS for petroleum refineries in 2012 (40 CFR 60 Subparts J and Ja) and issued National Emission Standards for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units on April 11, 2002 (amended February 9, 2005) (40 CFR 63 Subpart UUU). These revised air regulations may be another reason why petroleum refinery discharges are showing higher levels of metals. EPA needs to study this further.

As part of the 2011 and 2012 Petroleum Refining Annual Reviews, EPA (U.S. EPA, 2012, 2014) found that:

- The catalytic reforming process may form dioxin and dioxin-like compounds.
- Discharges of metal pollutants are increasing.

As shown in Table 5-73, the number of facilities reporting non-zero metals TWPE increased and the DMR metals discharges doubled from 2000 to 2009.

Table 5-73. Petroleum Refining Metals DMR Discharges

Year of Discharge	Number of Facilities Reporting Metals[a]	Number of Facilities Reporting Non-Zero TWPE[a]	Total Metal TWPE
2000	104	77	30,100
2009	253	117	66,300

Sources: 2011 Annual Review Report, Tables 19-12 and 19-13 (U.S. EPA, 2012).
[a] Includes all facilities reporting metals discharges.

In addition to the refinery-specific findings, EPA has been collecting data on new treatment technologies to evaluate if new technologies demonstrate better performance than technologies used as the basis for existing ELGs from 1982.

In summary, EPA plans to conduct the study of this industry to determine if changes to the existing ELGs are needed because:

- Recent changes to the industry may have resulted in new wastestreams or wastewater characteristics.
- EPA has observed an increase in metals discharges.
- EPA has observed an increase in the number of refineries reporting metals discharges.
- Only one metal (chromium) was included in the current Petroleum Refining ELGs.

As part of the preliminary study, EPA plans to:

- Collect updated industry profile information to identify refineries that:
  - Use catalytic reforming;
  - Process heavy crude; and
  - Installed new air pollution control equipment that generates wastewater.
- Continue to analyze trends in DMR and TRI data to identify pollutants of interest.
- Review data from other EPA and government programs, or industry sources (e.g., Office of Air and Radiation, Department of Energy's Energy Information Administration, *Oil and Gas Journal*).
- Review information on new treatment technologies to determine if they can remove pollutants in petroleum wastewater to a better degree than the technology upon which the current ELG was based.

EPA will use the study to identify:

- Additional data needs for this industry, including information on its economics and potential environmental impacts of current discharges.
- Pollutants in petroleum refining wastewater that may not be included in permits and may warrant further study.
- Treatment technologies that more effectively remove pollutants from petroleum wastewater.

Pending the preliminary study's findings, EPA may collect additional data through permit and permit application reviews, site visits, or other methods.

5.9.1 References for Petroleum Refining Category

1. U.S. EPA. 2004. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.

2. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report.* Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.

3. U.S. EPA. 2014. *The 2012 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-004. EPA-HQ-OW-2010-0824. DCN 07756.

5.10 Pulp, Paper, and Paperboard (40 CFR Part 430)

EPA identified the Pulp, Paper, and Paperboard (Pulp and Paper) Category (40 CFR Part 430) for preliminary review because it continues to rank high, in terms of toxic-weighted pound equivalents (TWPE), in point source category rankings. EPA previously reviewed discharges from pulp and paper facilities as part of the Preliminary and Final Effluent Guidelines Program Plans in 2004–2011 (U.S. EPA, 2004a, 2006a, 2007, 2008, 2009a, 2011, 2012). During its 2006 Final Effluent Guidelines Program Plan reviews, EPA also conducted a detailed study of this industry (U.S. EPA, 2006b). This section summarizes the results of the 2013 Annual Review associated with the Pulp and Paper Category.

The estimated toxicity of the Pulp and Paper Category discharges resulted from discharge monitoring report (DMR)–reported discharges of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and sulfide, and Toxics Release Inventory (TRI)–reported discharges of dioxin and dioxin-like compounds and manganese and manganese compounds. Sulfide, dioxin and dioxin-like compounds, and manganese and manganese-like compounds, reviewed as part of the 2011 Annual Review, continue to be top pollutants of concern. For the 2013 Annual Review, 2011 DMR data also showed significant contributions of TCDD to the Pulp and Paper Category TWPE.

5.10.1 Pulp and Paper Category 2013 Toxicity Rankings Analysis

Table 5-74 compares the toxicity rankings analysis (TRA) results for the Pulp and Paper Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review as discussed in the Final 2012 and Preliminary 2014 Effluent Guidelines Program Plan (U.S. EPA, 2014a). As discussed in this section, EPA's review of the Pulp and Paper Category identified a data error that affected the 2011 DMR data and TWPE. The bottom row of Table 5-74 shows the corrected data resulting from this review.

Table 5-74. Pulp and Paper Category TRI and DMR Facility Counts and Discharges for 2011 and 2013 Annual Reviews

Year of Discharge	Year of Review	Pulp and Paper Category Facility Counts			Pulp and Paper Category TWPE		
		Total of TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total
2009[d]	2011	250	137	20	1,080,000	260,000	1,340,000
2011	2013	219	130	24	651,000	1,020,000	1,670,000
2011[e]	2013				651,000	576,000	1,230,000

Sources: 2011 Annual Review Report (for 2009[d] DMR and TRI TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.
[e] 2011 data after corrections made during the 2013 Annual Review.

As shown in Table 5-74, the number of facilities in TRI and the number of major DMR facilities decreased from 2009 to 2011, while the number of minor DMR facilities increased. During that period, the TRI TWPE has decreased, while the DMR TWPE has increased.

5.10.2 Pulp and Paper Category Pollutants of Concern

For its 2013 Annual Review, EPA's review of the Pulp and Paper Category focused on the 2011 TRI and DMR discharges because both contribute to the category's combined TWPE. Table 5-75 compares the five pollutants with the highest contribution to the 2011 DMR TWPE. For comparison, it also shows the 2009 DMR TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012). Table 5-75 also presents the 2011 DMR TWPE after EPA corrected an error identified in this preliminary category review (discussed in the sections below). TCDD and sulfide contribute more than 85 percent of the total 2011 DMR TWPE. EPA's investigations of the top two DMR pollutants are presented in Sections 5.10.3 and 5.10.4. EPA did not investigate the other top DMR pollutants as part of the 2013 Annual Review, including 2,3,7,8-tetrachlorodibenzofuran, aluminum, and mercury because they represent less than 11 percent of the total DMR TWPE for the Pulp and Paper Category.

Table 5-75 compares the five pollutants with the highest contribution to the 2011 TRI TWPE. In addition, as a point of comparison, Table 5-3 shows the 2009 TRI TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012). Manganese and manganese compounds and dioxin and dioxin-like compounds contribute more than 77 percent of the total 2011 TRI TWPE. EPA's investigations of the top two TRI pollutants are presented in Sections 5.10.3 and 5.10.5. EPA did not investigate the other top TRI pollutants as part of the 2013 Annual Review, including mercury, lead, and polycyclic aromatic compounds (PACs) for TRI, because they represent less than 18 percent of the total TRI TWPE for the Pulp and Paper Category.

Table 5-75. Pulp and Paper Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
TCDD	6	626,000	183,000	26,100
Sulfide	2	241,000	241,000	147,000
2,3,7,8-tetrachlorodibenzofuran	5	67,600	67,600[b]	1,260
Aluminum	30	26,900	26,900[b]	36,100
Mercury	25	20,300	20,300[b]	10,100
Top Pollutant Total	**NA**	**982,000**	**539,000**	**221,000**
Pulp and Paper Category Total	**147[c]**	**1,020,000**	**576,000**	**260,000**

Sources: *DMRLTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
NA: Not applicable.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR data include major and minor dischargers.
[b] 2,3,7,8-tetrachlorodibenzofuran, aluminum, and mercury discharges combined contribute less than 11 percent of the 2011 category TWPE. Therefore, EPA did not review these discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.

Table 5-76. Pulp and Paper Category Top TRI Pollutants

Pollutant	2011 TRI Data			2009 TRI Data
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE[a]	TWPE
Manganese and manganese compounds	104	266,000	266,000	298,000
Dioxin and dioxin-like compounds	38	238,000	238,000	613,000
Mercury and mercury compounds	81	52,700	52,700[b]	16,300
Lead and lead compounds	157	48,000	48,000[b]	61,100
PACs	21	14,000	14,000[b]	15,900
Top Pollutant Total	**NA**	**619,000**	**619,000**	**1,000,000**
Pulp and Paper Category Total	**221[c]**	**651,000**	**651,000**	**1,080,000**

Sources: *TRILTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 TRI TWPE) (U.S. EPA, 2012).
NA: Not applicable.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] EPA reviewed the 2011 TRI manganese and manganese compound and dioxin and dioxin-like compound discharges but determined that no data corrections were needed. Therefore, the corrected TWPE for these pollutants matches the original TWPE.
[b] Mercury, lead, and PAC discharges combined contribute less than 18 percent of the 2011 category TWPE. Therefore, EPA did not review these discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.

5.10.3 Pulp and Paper Category Dioxin Discharges in DMR and TRI

EPA reviewed 2011 DMR and TRI data on dioxin and dioxin-like compounds from pulp and paper mills for the 2013 Annual Review. EPA's investigation of the 2011 DMR dioxin data revealed that one facility, Rayonier Performance Fibers (Rayonier), in Jesup, GA, accounts for 71 percent of the 2011 DMR TCDD[18] discharges (shown in Table 5-77). EPA did not investigate the remaining facilities discharging TCDD.

Table 5-77. Top 2011 DMR TCDD Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Rayonier Performance Fibers	Jesup, GA	0.000629	443,000	71%
Remaining Facilities Reporting TCDD Discharges[a]		0.00026	183,000	29%
Total		**0.000889**	**626,000**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are five remaining facilities that have TCDD discharges in the 2011 DMR data.

EPA's investigation of the 2011 TRI dioxin and dioxin-like compounds discharges revealed that four facilities account for 74 percent of the dioxin and dioxin-like compound

[18] TCDD is a dioxin compound. Facilities can submit DMR data for individual dioxin compounds. In TRI, facilities report dioxin compounds as the group of dioxin and dioxin-like compounds.

discharges (shown in Table 5-78). EPA did not investigate the remaining facilities discharging dioxin and dioxin-like compounds.

Table 5-78. Top 2011 TRI Dioxin and Dioxin-Like Compound Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Kimberly-Clark Worldwide	Everett, WA	0.00101	67,700	28%
SD Warren Co.	Skowhegan, ME	0.000366	42,200	18%
Rayonier Performance Fibers LLC	Fernandina Beach, FL	0.0162	38,900	16%
Simpson Tacoma Kraft Co. LLC	Tacoma, WA	0.00174	27,100	11%
Remaining Facilities Reporting Dioxin and Dioxin-Like Compound Discharges[a]		0.0766	61,800	26%
Total		**0.0959**	**238,000**	**100%**

Source: *TRILTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 34 remaining facilities that have dioxin and dioxin-like compound discharges in the 2011 TRI data.

Rayonier Performance Fibers, Jesup, GA

Rayonier in Jesup, GA, is the top 2011 DMR TCDD discharger. The facility discharges TCDD from outfall 0A0. As part of the 2013 Annual Review, EPA contacted Rayonier about the facility's TCDD discharges. Rayonier stated that the TCDD discharges were measured at levels below the detection limit (BDL). Rayonier confirmed that the BDL indicators for the TCDD discharges were not properly marked on the 2011 DMR (Mooney, 2014). As described in Section 3.2.2.2 in EPA's *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), EPA zeros the load when all concentrations of a specific pollutant are BDL for all monitoring periods (U.S. EPA, 2009b). Therefore, EPA zeroed Rayonier's discharges, which decreases the 2011 DMR TCDD TWPE for the Pulp and Paper category from 626,000 to 183,000, as shown in Table 5-75.

Kimberly-Clark

EPA reviewed the TRI dioxin and dioxin-like compound discharges from Kimberly-Clark in Everett, WA, as part of the 2011 and 2012 Annual Reviews. EPA determined that the mill calculated its dioxin and dioxin-like compound releases using mass balances using historical congener data, not actual discharge measurements. In addition, this mill shut down in April 2012 (U.S. EPA, 2012, 2014b). For these reasons, Kimberly-Clark's dioxin and dioxin-like compound discharges do not represent discharges across the Pulp and Paper Category.

SD Warren Co.

As part of the 2011 and 2012 Annual Reviews, EPA reviewed the TRI dioxin and dioxin-like compound discharges from SD Warren Co. From these earlier reviews, EPA determined that the mill calculated its dioxin and dioxin-like compound releases using May 2002 final effluent sampling data, corrected for the annual flow and the naturally occurring congeners contained in the mill's receiving water, pulp wood, and kaolin clay (U.S. EPA, 2012). In 2009, EPA also determined that the mill's dioxin and dioxin-like compound discharges, measured in May 2002, were less than EPA's Method 1613 Minimum Levels (MLs) (U.S. EPA, 2014b). EPA previously concluded that concentrations below the MLs may not be accurate, and the measurements may not accurately reflect industry discharges.

During the 2013 Annual Review, to verify SD Warren Co.'s reported 2011 TRI dioxin and dioxin-like compound discharges, EPA contacted the American Forest and Paper Association (AF&PA) and NCASI. AF&PA is the national trade association of the forest, pulp, paper, paperboard, and wood products industry. NCASI is a nonprofit research institute funded by North American forest products industry, including pulp and paper facilities. AF&PA confirmed with the mill that the 2011 dioxin and dioxin-like compound discharges reported to TRI were correct and stated that the mill continues to follow the same TRI calculation methodology discussed in the 2011 and 2012 Annual Review Reports (Schwartz, 2013). EPA observed that the mill's reported TRI dioxin and dioxin-like compound TWPEs were similar in magnitude in 2011 (42,200) and 2009 (37,900). For these reasons, EPA concluded that SD Warren Co.'s dioxin and dioxin-like compound discharges are not a hazard priority at this time.

Rayonier Performance Fibers, Fernandina Beach, FL

EPA reviewed TRI dioxin and dioxin-like compound discharges from Rayonier Performance Fibers (Rayonier) in Fernandina Beach, FL, as part of the 2011 and 2012 Annual Reviews. From these earlier reviews, EPA confirmed that the mill bases its reported dioxin and dioxin-like compound discharges on quarterly measurements (U.S. EPA, 2012). Rayonier reported that they detected seven dioxin congeners[19] in their effluent wastewater in 2009. Two of these congeners, 1,2,3,4,6,7,8,9-OCDD and 2,3,7,8-TCDF, were detected above EPA's Method 1613 MLs; however, in its 2012 Annual Review, EPA concluded that the concentrations are low and that the discharges do not warrant further review (U.S. EPA, 2014b).

Rayonier reported to TRI that it released five dioxin congeners in its wastewater discharges in 2011.[20] As part of the 2013 Annual Review, EPA contacted AF&PA and NCASI about the mill's 2011 dioxin and dioxin-like compound discharges. NCASI confirmed with the mill that the 2011 dioxin and dioxin-like compound discharges reported to TRI were correct and stated that the same calculation methodology is used (Schwartz, 2013). As in the 2009 data, in 2011 Rayonier reported detecting two congeners,1,2,3,4,6,7,8,9-OCDD and 2,3,7,8-TCDF, above EPA's Method 1613 MLs. Further, the 2011 TWPE (38,900) is similar in magnitude to the 2009 TWPE (37,800). Therefore, EPA concluded that the dioxin and dioxin-like compound discharges from Rayonier are not a hazard priority at this time.

Simpson Tacoma Kraft Co. LLC

EPA reviewed TRI dioxin and dioxin-like compound discharges from Simpson Tacoma Kraft Co, LLC (Simpson Tacoma), in Tacoma, WA, as part of the 2011 and 2012 Annual Reviews. These earlier reviews demonstrated that Simpson Tacoma based its reported dioxin and

[19] Rayonier detected concentrations of 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,6,7,8,9-OCDD; 2,3,7,8-TCDF; 2,3,4,7,8-PeCDF; 1,2,3,4,6,7,8-HpCDF; and 1,2,3,4,6,7,8,9-OCDF in 2009. See Section 5.3.2 in the 2012 Annual Review Report (U.S.EPA, 2014b).

[20] Rayonier detected concentrations of 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,6,7,8,9-OCDD; 2,3,7,8-TCDF; 1,2,3,4,6,7,8-HpCDF; and 1,2,3,4,6,7,8,9-OCDF in 2011.

dioxin-like compound releases on full congener testing sampled annually and detected dioxin congeners in the effluent wastewater are below EPA's Method 1613B ML (U.S. EPA, 2012, 2014b).

As part of the 2013 Annual Review, EPA contacted AF&PA and NCASI about the mill's 2011 dioxin and dioxin-like compound discharges. AF&PA confirmed with the mill that the 2011 dioxin and dioxin-like compound discharges reported to TRI were correct and provided results of Simpson Tacoma's analysis of 2011 and 2012 wastewater discharges (Schwartz, 2013). Table 5-79 presents the results of the 2011 and 2012 analyses provided by the mill. As shown, all measured concentrations are below EPA's Method 1613B MLs. Therefore, EPA concludes that the dioxin and dioxin-like compound discharges from Simpson Tacoma do not warrant further review at this time.

Table 5-79. 2011 and 2012 Concentrations of Dioxin and Dioxin-Like Compounds from Simpson Tacoma (pg/L) and EPA Method 1613B Minimum Levels

Congener	1613B ML (pg/L)	2011 Average Concentration (pg/L)	2012 Average Concentration (pg/L)
Polychlorinated dibenzo p furans (CDFs)			
2,3,7,8-TCDF	10	0.385	0[a]
1,2,3,7,8-PeCDF	50	0.454	0.35
2,3,4,7,8-PeCDF	50	0.5	0[a]
1,2,3,4,7,8-HxCDF	50	0[a]	0.42
1,2,3,6,7,8-HxCDF	50	0.347	0.42
2,3,4,6,7,8-HxCDF	50	0.351	0[a]
1,2,3,7,8,9-HxCDF	50	0[a]	0[a]
1,2,3,4,6,7,8-HpCDF	50	0.92	1.01
1,2,3,4,7,8,9-HpCDF	50	0[a]	0[a]
1,2,3,4,6,7,8,9-OCDF	100	1.05	1.01
Polychlorinated dibenzo p dioxins (CDDs)			
2,3,7,8-TCDD	10	0[a]	0[a]
1,2,3,7,8-PeCDD	50	0.258	0.4
1,2,3,4,7,8-HxCDD	50	0[a]	0[a]
1,2,3,6,7,8-HxCDD	50	0.418	0.92
1,2,3,7,8,9-HxCDD	50	0.175	0[a]
1,2,3,4,6,7,8-HpCDD	50	4.01	14.0
1,2,3,4,6,7,8,9-OCDD	100	23.7	39.8

Source: Schwartz, 2013.
ML: Minimum level established for EPA Method 1613B (U.S. EPA, 2004b).
[a] Simpson Tacoma did not include reporting limits for any congeners but stated that all zero values were BDL (Schwartz, 2013).

5.10.4 Pulp and Paper Category Sulfide Discharges in DMR

EPA's investigation of the sulfide discharge revealed that one facility, Smurfit-Stone Container (Smurfit-Stone), in Florence, SC, accounts for 97 percent of the 2011 DMR sulfide discharges (shown in Table 5-80). Because the Smurfit-Stone mill dominated the reported discharges, EPA did not investigate the remaining facility discharging sulfide.

Table 5-80. Top 2011 DMR Sulfide Discharging Facilities

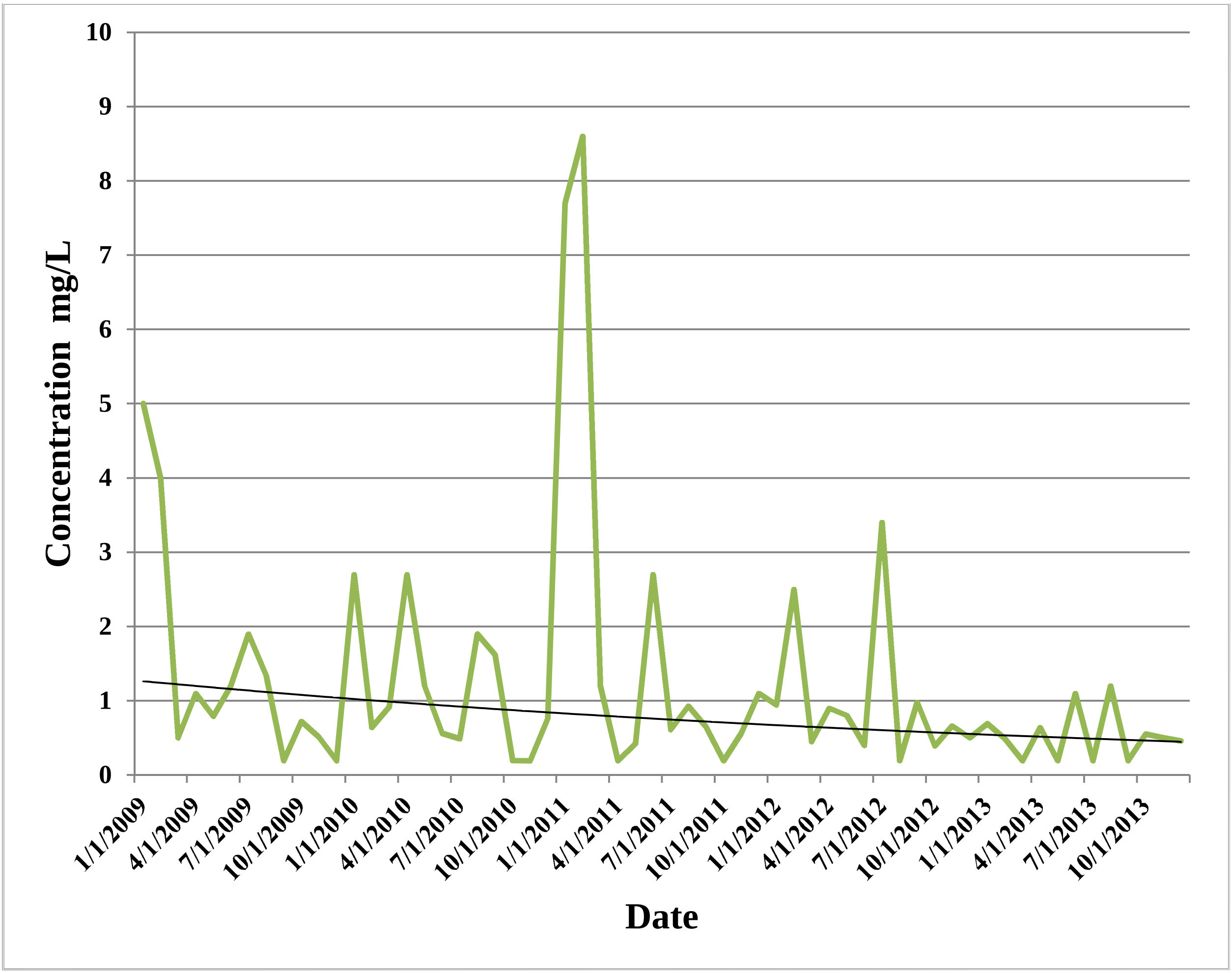
Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Smurfit-Stone Container	Florence, SC	83,500	234,000	97%
Domtar – Johnsonburg Mill	Johnsonburg, PA	2,590	7,250	3%
Total		**86,100**	**241,000**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.

Smurfit-Stone discharges sulfide from outfall 001. EPA reviewed the mill's sulfide discharges as part of the 2011 Annual Review and contacted AF&PA about the sulfide discharges. The mill's permit includes monitoring and reporting requirements for sulfide, but there are no numeric sulfide discharge limits. The Pulp and Paper Category effluent limitations guidelines and standards do not regulate sulfide (U.S. EPA, 2012).

The mill's kraft pulping process uses sodium-based alkaline pulping solution (liquor) which consists of sodium sulfide and sodium hydroxide in 10 percent solution. This is the primary source of sulfides in the wastewater. Smurfit-Stone's permit states that sulfide discharges from the facility have a reasonable potential to exceed water quality criteria for aquatic life; therefore, monitoring and reporting requirements for sulfide were added to the permit (SCDHEC, 2006). EPA determined in the 2011 Annual Review that the mill's sulfide concentrations range from <0.38 to 4 milligrams per liter and are below or near treatable levels. Therefore, the mill's sulfide discharges did not warrant further review (U.S. EPA, 2012).

As part of the 2013 Annual Review, EPA contacted AF&PA about Smurfit-Stone's 2011 DMR sulfide discharges. AF&PA confirmed with the mill that these discharges were correct and stated that sulfide measurements for January and February 2011 appear to be anomalies, which skew the average sulfide concentration for 2011. The mill reviewed its DMR sulfide data from 2009 to 2013, determining that the January and February 2011 concentrations are anomalies and that the sulfide concentrations in the effluent are decreasing. Figure 5-1 presents the downward trend of sulfide concentrations for years 2009 to 2013.The mill contact also explained that no process changes have occurred that would affect the source of sulfide at the mill (Schwartz, 2014a). For these reasons, EPA concluded that the sulfide discharges from Smurfit-Stone do not warrant further review at this time.



Source: Schwartz, 2014b.
Note: Non-detects are shown at half of non-detect value.

Figure 5-1. 2009–2013 Sulfide Concentrations for Smurfit-Stone Mill

5.10.5 Pulp and Paper Category Manganese and Manganese Compound Discharges in TRI

Manganese and manganese compound discharges account for 41 percent of the total 2011 TRI TWPE. In 2011, 104 facilities reported discharges of manganese and manganese compounds to TRI; no facility accounts for more than 6 percent of the TWPE. EPA reviewed the TRI manganese and manganese compound discharges for the Pulp and Paper Category as part of the 2011 Annual Review and confirmed its previous conclusions from the Pulp and Paper Detailed Study: manganese and manganese compound discharges in this category are below treatable levels (U.S. EPA, 2006b, 2012).

Table 5-81 presents the manganese and manganese compound discharges in TRI and DMR from 2002 to 2011. As shown, 2011 manganese and manganese compound discharges are similar to those in previous years. Therefore, EPA continues to conclude that manganese and manganese compound discharges in the Pulp and Paper Category are below treatable levels.

Table 5-81. 2002–2011 Manganese and Manganese Compound Discharges in TRI and DMR

Discharge Year	Review Year	TRI Data		DMR Data	
		Number of Dischargers	Total TWPE	Number of Dischargers	Total TWPE
2002	2006	112	304,000	4	287
2004	2007	117	316,000	5	5,190
2007	2009	79	231,000	5	3,210
2008	2010	117	308,000	3	3,040
2009	2011	115	298,000	3	2,960
2011	2013	104	266,000	5	522

Sources: *TRIReleases2002; PCSLoads2002; TRIReleases2004_v3; PCSLoads2004_v3; TRIReleases2007_v2; DMRLoads2007_v4; TRIReleases2008_v3; DMRLoads2008_v3; TRIReleases2009_v2; DMRLoads2009_v2; DMRLTOutput2011_v1; TRILTOutput2011_v1*.

5.10.6 Pulp and Paper Category Findings

The estimated toxicity of the Pulp and Paper Category discharges resulted from DMR-reported discharges of dioxin (TCDD) and sulfide, and TRI-reported discharges of dioxin and dioxin-like compounds and manganese and manganese compounds. In the 2013 Annual Review, EPA has identified the following:

- One facility, Rayonier Performance Fibers in Jesup, GA, accounts for 71 percent of the category's DMR TCDD discharges. The facility contact confirmed that BDL indicators were not properly marked on the DMR. Because all TCDD discharges were non-detect, EPA zeroed the TCDD load and TWPE for Rayonier, which decreased the 2011 TCDD Pulp and Paper Category TWPE from 626,000 to 183,000.
- Four facilities account for 74 percent of the category's TRI dioxin and dioxin-like compound discharges. EPA previously reviewed these facilities as part of the 2011 and 2012 Annual Reviews. One of them, Kimberly-Clark in Everett, WA, shut down in 2012. For the other three facilities, EPA determined that 2011 dioxin and dioxin-like compound discharges are either below or near EPA Method 1613 MLs and are similar to 2009 dioxin and dioxin-like compound discharges. Accordingly, dioxin and dioxin-like compound discharges do not warrant further review at this time.
- One facility, Smurfit-Stone in Florence, SC, accounts for 97 percent of the category's DMR sulfide discharges. EPA determined that the January and February 2011 sulfide concentrations for Smurfit-Stone were anomalies and skewed the 2011 total sulfide discharge. The sulfide concentrations have since decreased over time. Therefore, further review of the facility's sulfide discharges is not warranted at this time.
- In 2011, 104 facilities reported discharges of manganese and manganese compounds to TRI. No facility accounts for more than 6 percent of the TWPE. EPA's 2011 Annual Review and 2006 Detailed Study determined that manganese

and manganese compound concentrations in pulp and paper mill discharges were below treatable levels, which is still true for the 2013 Annual Review.

- EPA corrected errors for discharges reported by one mill. This decreases the 2011 Pulp and Paper Category TWPE from 1,670,000 to 1,230,000. EPA reviewed discharges reported by five other mills, but made no corrections. For these mills, EPA either determined that discharges were anomalies for the 2011 reporting year or are below method MLs or treatable levels and a category-wide discharge issue, warranting an effluent guidelines revision, is not apparent.

5.10.7 References for Pulp and Paper Category

1. ERG. 2014. Preliminary Category Review – Facility Data Review and Revised Calculations for Point Source Category 430 – Pulp and Paper. (March). EPA-HQ-OW-2014-0170. DCN 07932.

2. Mooney, Brian. 2014. Telephone and Email Communication Between Brian Mooney, Rayonier Performance Fibers, Jesup Mill, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2011 DMR Clarification for TCDD Discharges. (January). EPA-HQ-OW-2014-0170. DCN 07927.

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6. Schwartz, Jerry. 2014b. Sulfide Data Chart for Smurfit-Stone Enterprises, Florence, SC – SC000876 from Jerry Schwartz, American Forest and Paper Association. (January). EPA-HQ-OW-2014-0170. DCN 07931.

7. U.S. EPA. 2004a. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.

8. U.S. EPA. 2004b. Method 1613B: Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS. Washington, D.C. (October). EPA-HQ-OW-2004-0032-2653.

9. U.S. EPA. 2006a. *Technical Support Document for the 2006 Effluent Guidelines Program Plan*. Washington, D.C. (December). EPA-821-R-06-018. EPA-HQ-OW-2004-0032-2782.

10. U.S. EPA. 2006b. *Final Report: Pulp, Paper, and Paperboard Detailed Study*. Washington, D.C. (December). EPA-821-R-06-016. EPA-HQ-OW-2004-0032-2249.

11. U.S. EPA. 2007. *Technical Support Document for the Preliminary 2008 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-07-007. EPA-HQ-OW-2006-0771-0819.

12. U.S. EPA. 2008. *Technical Support Document for the 2008 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-08-015. EPA-HQ-OW-2006-0771-1701.

13. U.S. EPA. 2009a. *Technical Support Document for the Preliminary 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-09-006. EPA-HQ-OW-2008-0517-0515.

14. U.S. EPA. 2009b. Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories. EPA-821-R-09-007. Washington, DC. (October). EPA-HQ-OW-2008-0517-0515.

15. U.S. EPA. 2011. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA 820-R-10-021. EPA-HQ-OW-2008-0517. DCN 07320.

16. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report.* Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.

17. U.S. EPA. 2014a. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans*. Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170. DCN 07756.

18. U.S. EPA. 2014b. *The 2012 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-004. EPA-HQ-OW-2010-0824. DCN 07933.

5.11 Timber Products Processing (40 CFR Part 429)

EPA selected the Timber Products Processing (Timber Products) Category for preliminary review because it ranks high, in terms of toxic-weighted pound equivalents (TWPE), in the point source category rankings. EPA reviewed discharges from the Timber Products Category as part of the 2004 and 2011 Annual Reviews (U.S. EPA, 2004, 2012). This section summarizes the results of the 2013 Annual Review associated with the Timber Products Category. EPA focused on discharges of chlorine, copper, and arsenic from discharge monitoring reports (DMR) because of their high TWPE relative to the other pollutants in the Timber Products Category. Copper, reviewed as part of the 2011 Annual Review, continues to be a top pollutant of concern. For the 2013 Annual Review, available discharge data also showed significant contributions of chlorine and arsenic to the Timber Products Category TWPE.

5.11.1 Timber Products Category 2013 Toxicity Rankings Analysis

Table 5-82 compares the toxicity rankings analysis (TRA) results for the Timber Products Category from the 2011 and 2013 Annual Reviews. EPA did not conduct the TRA in 2012, but instead reviewed additional data sources as part of the even-year annual review as discussed in the Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans (U.S. EPA, 2014). As discussed in this section, EPA's review of the Timber Products Category identified several data errors that affected the 2011 DMR data and TWPE. The bottom row of Table 5-82 shows the corrected data resulting from this review.

Table 5-82. Timber Products Category TRI and DMR Facility Counts and Discharges for the 2011 and 2013 Annual Reviews

Year of Discharge	Year of Review	Timber Category Facility Counts			Timber Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities[a]	TRI TWPE[b]	DMR TWPE[c]	Total TWPE
2009[d]	2011	101	1	54	22,700	11,800	34,500
2011	2013	102	2	80	32,300	99,600	132,000
2011[e]	2013				32,300	72,800	105,000

Sources: 2011 Annual Review Report (for 2009[d] DMR and Toxics Release Inventory (TRI) TWPE) (U.S. EPA, 2012); *DMRLTOutput2011_v1* (for 2011 DMR); *TRILTOutput2011_v1* (for 2011 TRI).
Note: EPA did not evaluate DMR data for 2010.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR minor facilities report pollutant discharges that contribute to the total DMR TWPE.
[b] Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.
[c] DMR discharges from both minor and major facilities.
[d] 2009 data after corrections made during the 2011 Annual Review.
[e] 2011 data after corrections made during the 2013 Annual Review.

As shown in Table 5-82, the total TWPE (incorporating data corrections) increased from 2009 to 2011. During that period, the number of TRI and major and minor DMR facilities increased.

5.11.2 Timber Products Category Pollutants of Concern

For its 2013 Annual Review, EPA's review of the Timber Products Category focused on the 2011 DMR discharges because the 2011 DMR data dominate the category's combined TWPE. Table 5-83 compares the five pollutants with the highest contribution to the 2011 DMR TWPE. It also presents the 2011 DMR TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). For comparison, it also shows the 2009 DMR TWPE for these top five pollutants based on the results of (and corrections identified in) the 2011 Annual Review (U.S. EPA, 2012).

Total residual chlorine, copper, and arsenic contribute more than 93 percent of the total 2011 DMR TWPE. EPA's investigations of reported discharges of the top three pollutants are presented in Sections 5.11.3 to 5.11.5. EPA did not investigate the other pollutants as part of the 2013 Annual Review, including pentachlorophenol and iron, because they represent less than 7 percent of the 2011 DMR TWPE for the Timber Products Category.

Table 5-83. Timber Products Category Top DMR Pollutants

Pollutant	2011 DMR Data[a]			2009 DMR Data[a]
	Number of Facilities Reporting Pollutant	Original TWPE	Corrected TWPE	TWPE
Total residual chlorine	9	60,800	60,800	155
Copper	39	16,500	2,150	300
Arsenic	27	15,600	3,190	336
Pentachlorophenol	10	2,190	2,190[b]	238
Iron	9	1,100	1,100[b]	7,930
Top Pollutant Total	**NA**	**96,200**	**69,400**	**8,960**
Timber Products Category Total	**82[c]**	**99,600**	**72,800**	**11,800**

Sources: *DMRLTOutput2011_v1* (for Original 2011 TWPE); 2011 Annual Review Report (for 2009 DMR TWPE) (U.S. EPA, 2012).
NA: Not applicable.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] DMR data include major and minor dischargers.
[b] Pentachlorophenol and iron discharges combined contribute less than 3 percent of the 2011 category DMR TWPE. Therefore, EPA did not review pentachlorophenol or iron discharges as part of the 2013 Annual Review.
[c] Number of facilities reporting TWPE greater than zero.

5.11.3 Timber Products Category Total Residual Chlorine Discharges in DMR

EPA's investigation of the total residual chlorine discharges revealed that Cahaba Timber Co. (Cahaba Timber), in Brierfield, AL, accounts for greater than 99 percent of the 2011 DMR chlorine discharges (shown in Table 5-84). EPA did not investigate the remaining facilities discharging total residual chlorine.

Table 5-84. Top 2011 DMR Total Residual Chlorine Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Cahaba Timber Co.	Brierfield, AL	121,000	60,600	>99%
All Other Chlorine Dischargers in the Timber Products Category[a]		274	137	<1%
Total		**122,000**	**60,800**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are eight remaining facilities that have total residual chlorine dischargers in the 2011 DMR data.

Cahaba Timber discharges total residual chlorine through five outfalls. The facility performs wood preserving operations, mainly for poles (e.g., telephone poles). As part of the 2013 Annual Review, EPA contacted Cahaba Timber about its total residual chlorine discharges. The facility contact confirmed the 2011 discharges and explained that a permit change required the facility to start reporting total residual chlorine discharge data in its DMRs in 2011; the facility did not submit total residual chlorine DMR data before 2011 (Woodruff, 2013). Total residual chlorine is not a regulated pollutant in the Timber Products Category effluent limitations guidelines and standards. Additionally, the facility's permit requires monitoring of total residual chlorine discharges from all outfalls, but does not include specific permit limitations for total residual chlorine (ADEM, 2011).

The facility has no treatment processes in place for total residual chlorine. The facility contact explained that the facility uses three wood preservatives, one of which is pentachlorophenol. Minor chlorine discharges may be coming from contact stormwater due to the storage of poles treated with the pentachlorophenol preservative. All five outfalls are stormwater outfalls that co-mingle with discharges from the cooling tower and boiler blowdown. The facility contact stated that chlorine discharges may also be from the cooling tower/boiler blowdown discharges (Woodruff, 2013).

Table 5-85 presents Cahaba Timber's 2011 DMR total residual chlorine and flow discharge data. Because this facility is contributing more than 99 percent of the total 2011 DMR residual chlorine TWPE, EPA does not consider these discharges to be representative of the Timber Category.

Table 5-85. Cahaba Timber's 2011 DMR Total Residual Chlorine and Flow Discharge Data

Outfall	Monitoring Period Date	Concentration (mg/L)	Flow (MGD)
001	30-Sep-2011	24.1	0.78
001	31-Dec-2011	7.2	0.19
002	30-Sep-2011	9.24	0.78
002	31-Dec-2011	5.73	0.19
003	30-Sep-2011	33	0.78
003	31-Dec-2011	6.55	0.19

Table 5-85. Cahaba Timber's 2011 DMR Total Residual Chlorine and Flow Discharge Data

Outfall	Monitoring Period Date	Concentration (mg/L)	Flow (MGD)
004	30-Sep-2011	18.4	0.78
004	31-Dec-2011	7.19	0.19
005	30-Sep-2011	8.89	0.78
005	31-Dec-2011	3.8	0.19

Source: *DMRLTOutput2011_v1*.

5.11.4 Timber Products Category Copper Discharges in DMR

EPA's investigation of the copper discharges revealed that Ed Arey & Sons, Inc. (Ed Arey), in Buckhannon, WV, accounts for more than 87 percent of the 2011 DMR copper discharges (shown in Table 5-86). EPA did not investigate the remaining facilities discharging copper.

Table 5-86. Top 2011 DMR Copper Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Ed Arey & Sons Inc.	Buckhannon, WV	22,800	14,300	87%
All Other Copper Dischargers in the Timber Products Category[a]		3,420	2,150	13%
Total		**26,200**	**16,500**	**100%**

Source: DMRLTOutput2011_v1.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 38 remaining facilities that have copper dischargers in the 2011 DMR data.

Ed Arey discharges copper through three outfalls, 001, 002, and 003. Table 5-87 presents Ed Arey's 2011 DMR copper concentration and flow discharge data. EPA previously reviewed copper discharges from Ed Arey as part of the 2011 Annual Review. During that review, EPA compared the 2009 DMR concentration and flow values to 2008 and 2009 flow values from Envirofacts and found that the 2009 DMR flow values were 1,000,000 times higher than the 2008 flow values in Envirofacts. Therefore, EPA corrected the 2009 flow values. The 2011 flow data is also 1,000,000 times higher than the 2008 flow data values in Envirofacts; again, EPA corrected the 2011 values. Using the corrected flows, Ed Arey's copper discharges decrease to 0.0228 pounds and 0.0143 TWPE for 2011, reducing the facility's total TWPE by over 99 percent. This reduction in TWPE decreases the Timber Products Category's 2011 DMR copper TWPE from 16,500 to 2,150, as shown in Table 5-83.

Table 5-87. Ed Arey's 2011 DMR Copper and Flow Discharge Data

Outfall	Monitoring Period Date	Maximum Concentration (mg/L)	Original Flow (MGD)	Corrected Flow (MGD)
001	30-Apr-2011	0.017	235	0.000235
001	31-Oct-2011	0.026	200	0.0002
002	31-Oct-2011	0.0025	180	0.00018
003	31-Oct-2011	0.015	160	0.00016

Source: *DMRLTOutput2011_v1*.

5.11.5 Timber Products Category Arsenic Discharges in DMR

EPA's investigation of the arsenic discharges revealed that Free State Lumber Inc., in Haleyville, AL, accounts for 80 percent of the 2011 DMR arsenic discharges (shown in Table 5-88). EPA did not investigate the remaining facilities discharging arsenic as part of the 2013 Annual Review.

Table 5-88. Top 2011 DMR Arsenic Discharging Facilities

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Facility Percent of Category TWPE
Free State Lumber Co. Inc.	Haleyville, AL	3,090	12,500	80%
All other Arsenic Dischargers in the Timber Products Category[a]		781	3,150	20%
Total		**3,870**	**15,600**	**100%**

Source: *DMRLTOutput2011_v1*.
Note: Sums of individual values may not equal the total presented, due to rounding.
[a] There are 26 remaining facilities that have arsenic dischargers in the 2011 DMR data.

Free State Lumber discharges arsenic through two outfalls, 001 and 002. The arsenic concentrations for both outfalls are much higher in September and December 2011 than in March and June 2011. The facility permit requires monitoring for arsenic discharges from both outfalls; no permit limit is set (ADEM, 2009). As part of the 2013 Annual Review, EPA contacted Free State Lumber about its arsenic discharges. The facility contact stated that the September and December 2011 arsenic concentrations should be in units of micrograms per liter instead of milligrams per liter (Hubbard, 2013). Table 5-89 presents the original and corrected concentrations, along with average flow rates from the facility. Using the corrected concentrations, the facility's arsenic TWPE decreases from 12,500 to 36.3, reducing the Timber Products Category's arsenic TWPE from 15,600 to 3,190, as shown in Table 5-83.

Table 5-89. Free State Lumber's 2011 DMR Original and Corrected Arsenic Discharges

Outfall	Monitoring Period	Average Flow (MGD)	Original Average Arsenic Concentration (mg/L)	Corrected Average Arsenic Concentration (mg/L)
001	31-Mar-2011	0	0.005	0.005
001	30-Jun-2011	0.46	0.005	0.005

Table 5-89. Free State Lumber's 2011 DMR Original and Corrected Arsenic Discharges

Outfall	Monitoring Period	Average Flow (MGD)	Original Average Arsenic Concentration (mg/L)	Corrected Average Arsenic Concentration (mg/L)
001	30-Sep-2011	0	1.72	0.00172
001	31-Dec-2011	0.35	3.36	0.00336
002	31-Mar-2011	0	0.005	0.005
002	30-Jun-2011	1.1	0.005	0.005
002	30-Sep-2011	0	1.9	0.0019
002	31-Dec-2011	0.82	3.43	0.00343

Sources: *DMRLTOutput2011_v1*; Hubbard, 2013.

5.11.6 Timber Products Category Findings

The estimated toxicity of the Timber Products Category discharges resulted from DMR total residual chlorine, copper, and arsenic discharges. From the 2013 Annual Review, EPA has identified the following:

- One facility, Cahaba Timber, contributes the majority of the total residual chlorine discharges to the 2011 DMR data. The facility only began reporting discharges of total residual chlorine in 2011 due to a permit change, but does not have a specific permit limit for total residual chlorine. As a result, the facility is contributing more than 99 percent of the total 2011 DMR total residual chlorine TWPE. Therefore, EPA does not consider these discharges to be representative of the Timber Products Category.
- One facility, Ed Arey & Sons, Inc., contributes 87 percent of the category's copper DMR discharges. EPA identified errors in the flow values from the facility. With these errors corrected, the Timber Products Category's 2011 copper DMR decreased from 16,500 to 2,150.
- One facility, Free State Lumber, contributes the majority of the arsenic discharges to the 2011 DMR data. EPA identified an error in the concentrations reported for the facility, which the facility contact corrected. This change decreases the facility's arsenic TWPE from 12,500 to 36.4, reducing the Timber Products Category's arsenic TWPE from 15,600 to 3,190.
- Correcting the errors mentioned above decreases the 2011 Timber Products Category TWPE from 132,000 to 105,000. For the remaining facility reviewed as part of the 2013 Annual Review, EPA determined that the discharges were not representative of the industry.

5.11.7 References for Timber Products Category

1. ADEM. 2009. Alabama Department of Environmental Management. *NPDES Permit: Free State Lumber Company Inc., Haleyville, AL.* (March 27). EPA-HQ-OW-2014-0170. DCN 07934.

2. ADEM. 2011. Alabama Department of Environmental Management. *NPDES Permit: Cahaba Pressure Treated Forest Products Inc., Brierfield, AL.* (June 2). EPA-HQ-OW-2014-0170. DCN 07935.

3. ERG. 2014. Preliminary Category Review – Facility Data Review and Revised Calculations for Point Source Category 429 – Timber Products Processing. (March). EPA-HQ-OW-2014-0170. DCN 07941.

4. Hubbard, Tabitha. 2013. Telephone and Email Communication Between Tabitha Hubbard, Free State Lumber Co, Inc., William Swietlik, U.S. EPA, and Kimberly Bartell, Eastern Research Group, Inc. Re: 2011 DMR Clarification for Arsenic Discharges. (December 13). EPA-HQ-OW-2014-0170. DCN 07936.

5. U.S. EPA. 2004. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.

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8. Woodruff, Al, and Ken Layton. 2013. Telephone and Email Communication Between Al Woodruff, Cahaba Timber Co., Ken Layton, Layton Environmental Engineering LLC, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2011 DMR Chlorine Discharges for Cahaba Timber Co. (December 13). EPA-HQ-OW-2014-0170. DCN 07937.

PART III: RESULTS OF EPA'S 2013 ANNUAL REVIEW

6. RESULTS OF THE 2013 ANNUAL REVIEW

For the 2013 Annual Review, EPA evaluated the results of the toxicity rankings analysis (TRA) and the preliminary category reviews. Based on its TRA, EPA prioritized for further review 17 industrial categories whose pollutant discharges may pose the greatest hazards to human health or the environment because of their toxicity based on toxic-weighted pound equivalents (TWPE).

During its review, EPA determined that seven of the 17 categories that cumulatively discharge 95 percent of the TWPE did not warrant a detailed preliminary category review. For these seven categories, many of which have been reviewed in detail in prior annual reviews, EPA found that the majority of the TWPE resulted from easily identifiable errors (e.g., incorrect reporting units) associated with one or two facilities. For TWPE not associated with data entry errors, EPA did not identify any new information to alter the conclusions made during previous annual reviews. These industrial categories include:

- Concentrated Aquatic Animal Production (40 CFR Part 451);
- Meat and Poultry Products (40 CFR Part 432);
- Oil and Gas Extraction (40 CFR Part 435);
- Ore Mining and Dressing (40 CFR Part 440);
- Pesticide Chemicals (40 CFR Part 455);
- Fertilizer Manufacturing (40 CFR Part 418); and
- Sugar Processing (40 CFR Part 409).

For the remaining 10 of the 17 industrial categories that collectively discharge over 95 percent of the total TWPE, EPA completed a detailed preliminary category reviews to evaluate whether the categories warrant further review. From these reviews, EPA identified only two categories that warrant further review: Metal Finishing (40 CFR 433) and Petroleum Refining (40 CFR 419). Below are the findings from EPA's 2013 preliminary category reviews:

- **Coal Mining (40 CFR Part 434).** EPA identified and corrected data errors for 2011 discharge monitoring report (DMR) discharges of iron, mercury, sulfate, and manganese (the top pollutants). Correcting these reporting errors removes the category from the top 95 percent in the point source category rankings.
- **Drinking Water Treatment (potential new category).** EPA reviewed total residual chlorine, aluminum, copper, mercury, and lead (the top pollutants) for the 2013 Annual Review. EPA identified and corrected flow errors at four facilities accounting for the majority of the 2011 DMR total residual chorine and aluminum discharges. Further, EPA examined the findings from its 2011 review of the drinking water industrial, category which found that discharges from drinking water treatment plants are best addressed through National Pollutant Discharge Elimination System (NPDES) permits and that some pollutants are present in the wastewater from source water contributions or treatment chemicals. EPA compared the 2011 DMR top pollutants and concentrations to the findings from the 2011 review of the industrial category and determined that the same

conclusions apply. Therefore, EPA did not identify this category for further review.

- **Inorganic Chemicals Manufacturing (40 CFR Part 415).** EPA reviewed dioxin and dioxin-like compounds, manganese and manganese compounds, and polychlorinated biphenyls (PCBs) (the top pollutants), which result from three titanium dioxide manufacturing plants, for the 2013 Annual Review.
  - One facility reported dioxin discharges that account for 98 percent of the 2011 TRI dioxin category TWPE. EPA determined that the facility inadvertently reported 2011 dioxin and dioxin-like compound discharges using the minimum detection limit, when historically they have reported non-detect data as zero. Additionally, EPA determined that the 2011 concentrations for all congeners are below EPA's Method 1613B Minimum Level (ML).
  - One facility accounted for 39 percent of the 2011 TRI manganese category TWPE. EPA determined that the 2011 manganese and manganese compound TRI discharge for the facility is an anomaly due to an increase in flow at the facility during 2011, which is supported by a decrease in the discharge in 2012.
  - One facility accounted for 97 percent of the 2011 TRI PCB category TWPE. EPA determined that the facility's 2011 PCB discharges were accurate and increased from previous years. Therefore, facility-specific permitting action may be appropriate to address PCB discharges from this facility.

    EPA has determined that further review of the Inorganic Category as a whole is not warranted at this time.

- **Iron and Steel Manufacturing (40 CFR Part 420).** EPA reviewed discharges of fluoride, aluminum, cyanide, and total residual chlorine (top pollutants) for the 2013 Annual Review. EPA determined that:
  - Three facilities account for 73 percent of the 2011 DMR fluoride category TWPE. EPA identified and corrected a data error in one facility's 2011 DMR fluoride concentrations. EPA compared fluoride concentrations from all three facilities to concentrations achieved by current treatment technologies (although not specific to iron and steel manufacturing) and determined that all concentrations from two facilities were below treatable levels. EPA determined that fluoride concentrations from the third facility may exceed the concentration ranges achieved by current treatment technologies and that facility-specific permitting action may be appropriate to address fluoride discharges at this facility.
  - The majority (76 percent) of the 2011 DMR aluminum category TWPE was from one facility. EPA identified and corrected a data error for the facility's aluminum concentration, which decreased the aluminum TWPE for the category.

— Two facilities contribute the majority (60 percent) of the 2011 DMR cyanide category TWPE. For one facility, EPA determined that the 2011 cyanide concentrations do not exceed permit limitations or the long-term average concentration calculated for the 2002 category rulemaking. EPA suspects that this facility's TWPE is high due to the large amount of industrial activity at the facility, as it historically has been the top coke producer in the U.S. For the other facility, EPA found that several months of cyanide discharges from two different outfalls exceed the facility's mass-based permit limits; therefore, facility-specific permitting action may be appropriate to address cyanide discharges at this facility.

— One facility, historically the top coke producer in the U.S., accounts for 49 percent of the 2011 DMR total residual chlorine discharges. EPA determined that the total residual chlorine concentrations for this plant are a result of the large amount of industrial activity at the facility and do not exceed permit limitations.

EPA has determined that the data do not support the need to further review the Iron and Steel Category as a whole.

- **Metal Finishing (40 CFR Part 433).** During the 2012 Annual Review, EPA's review of the Targeted National Sewage Sludge Survey, combined with available indirect discharge data from TRI, identified the Metal Finishing Point Source Category as potentially discharging high concentrations of metals, particularly chromium, nickel, and zinc, to publicly owned treatment works. Additionally, this category ranked high, in terms of TWPE, in the 2013 TRA. These findings indicate that further review of this category may be warranted.
- **Nonferrous Metals Manufacturing (40 CFR Part 421).** EPA reviewed discharges of cadmium, copper, mercury PCBs, and lead (the top pollutants) for the 2013 Annual Review. EPA determined that:

— One facility accounts for 98 percent of the 2011 DMR cadmium category discharges. In 2012, the facility was issued a new permit to control cadmium discharges from its stormwater outfalls. EPA determined that further review of the facility's discharges is not needed at this time.

— One facility accounts for 88 percent of the 2011 DMR copper category discharges. EPA identified and corrected a data entry error for the facility's copper concentrations, which decreased the copper TWPE for the category.

— One facility contributes 99 percent of the 2011 DMR mercury category discharges. EPA previously reviewed these discharges as part of the 2010 and 2011 Annual Reviews. EPA determined that the facility's discharges result from former aluminum ore tailings lakes, not from current manufacturing. Because the facility no longer operates as an aluminum ore mine and processing facility and the discharges are similar to those in previous years, facility-specific permitting action may be appropriate to address this facility's mercury discharges.

— One facility accounts for 96 percent of the 2011 DMR PCB category discharges. EPA determined that this facility shut down its uranium enrichment process in 2013 and that cleanup efforts have been active at the site since the late 1980s. For these reasons, EPA is not performing further review of PCB discharges from this facility at this time.

— Two facilities account for 93 percent of the 2011 DMR lead category discharges. One facility was issued a new permit in 2012, which contains new permit limitations for lead. The second facility is steadily reducing the concentrations of lead discharges by installing new contaminant technology and using better management practices. Therefore, EPA did not identify lead discharges for further review at this time.

EPA has determined that the data do not support the need to further review the Nonferrous Metal Manufacturing Category as a whole.

- **Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR Part 414).** EPA reviewed discharges of hexachlorobenzene, total residual chlorine, and PCBs (the top pollutants) for the 2013 Annual Review. EPA identified that, for each of these pollutants, a majority of the discharges are attributed to a single facility whose reported discharges were in error. After correcting the data errors, EPA found that the TWPE has increased by 26.5 percent from 2009 to 2011. EPA expects that the high TWPE is a result of the increase in the number of minor facilities reporting discharges and the large number of facilities in the category.
- **Petroleum Refining (40 CFR Part 419).** During the 2011 Annual Review, EPA selected the Petroleum Refining Category (40 CFR Part 419) for a preliminary category review because it ranked high, in terms of TWPE (U.S. EPA, 2012). At that time, EPA found that the TWPE was largely due to TRI-reported discharges of dioxin and dioxin-like compounds, polycyclic aromatic compounds, and DMR-reported discharges of sulfides, chlorine, and metals. EPA continued to review this category during the 2012 Annual Review to verify facilities' discharges and confirmed the 2011 Annual Review results. EPA also reviewed new air pollution control regulations to identify whether the regulations could result in new wastewater streams. Additionally, this category ranked high, in terms of TWPE, in the 2013 TRA. These findings indicate that further study of this category may be warranted.
- **Pulp, Paper, and Paperboard (40 CFR Part 430).** EPA reviewed discharges of dioxin and dioxin-like compounds, manganese and manganese compounds, and sulfide (the top pollutants) for the 2013 Annual Review. EPA's review identified the following:

— One facility accounts for the majority (71 percent) of the 2011 DMR 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) category discharges. EPA identified and corrected a data entry error for the facility's TCDD concentrations, which decreased the TCDD TWPE for this category.

— Four facilities account for the majority (74 percent) of the 2011 TRI dioxin and dioxin-like compound discharges. EPA previously reviewed these four facilities as part of the 2011 and 2012 Annual Reviews. One of them shut down in 2012. For the other three, EPA determined that 2011 dioxin and dioxin-like compound discharges are either below or near EPA Method 1613 MLs and are similar to 2009 dioxin and dioxin-like compound discharges. As a result, further review of dioxin and dioxin-like compound discharges from this category is not warranted at this time.

— In 2011, 104 facilities reported discharges of manganese and manganese compounds to TRI. No facility accounts for more than 6 percent of the TWPE. EPA's 2011 Annual Review and 2006 Detailed Study of the industry determined that metals concentrations in pulp and paper mill discharges were below treatable levels. EPA did not identify any new information to alter its previous findings.

EPA has determined that the data do not support the need to further review the Pulp and Paper Category as a whole.

- **Timber Products Processing (40 CFR Part 429).** For this category, the top pollutants, in terms of TWPE, are total residual chorine, copper, and arsenic. EPA's review identified the following:

— One facility accounts for more than 99 percent of the 2011 DMR total residual chlorine category discharges. The facility only began reporting total residual chlorine discharges in 2011 and is not exceeding any permit limitations for total residual chlorine. As a result, EPA does not consider these discharges to be representative of the category; they do not warrant further review at this time.

— One facility accounts for 87 percent of the 2011 DMR copper category discharges. EPA identified and corrected a data entry error for the facility's copper concentrations.

— One facility accounts for 80 percent of the 2011 DMR arsenic category discharges. EPA identified and corrected a data entry error for the facility's arsenic concentrations, which decreased the arsenic TWPE for this category.

EPA has determined that the data do not support the need to further review the Timber Category as a whole.