



U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF INSPECTOR GENERAL

More Action Is Needed to Protect Water Resources From Unmonitored Hazardous Chemicals

Report No. 14-P-0363

September 29, 2014



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Abbreviations

CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	U.S. Environmental Protection Agency
NPDES	National Pollutant Discharge Elimination System
OIG	Office of Inspector General
POTW	Publicly Owned Treatment Works
RCRA	Resource Conservation and Recovery Act
TRI	Toxics Release Inventory
WET	Whole Effluent Toxicity

Cover photo: Stickney Water Reclamation Plant, Cicero, Illinois. (EPA OIG photo)

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At a Glance

Why We Did This Review

We evaluated the effectiveness of the U.S. Environmental Protection Agency's (EPA's) programs in preventing and addressing contamination of surface water from hazardous chemicals passing through publicly owned treatment works (hereafter "sewage treatment plants"). Hazardous wastes, regulated by the EPA, may be harmful to human health or the environment. Sewage treatment plants receive permits, from the EPA or states, for discharges to surface waters that establish pollutant monitoring requirements. However, hazardous chemicals discharged to sewers are not regulated under EPA hazardous waste regulations. Rather, they are regulated under the Clean Water Act, which focuses on a list of 126 priority pollutants that does not include many hazardous chemicals.

This report addresses the following EPA goals or cross-agency strategies:

- *Protecting America's waters.*
- *Ensuring the safety of chemicals and preventing pollution.*
- *Protecting human health and the environment by enforcing laws and assuring compliance.*

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The full report is at: www.epa.gov/oig/reports/2014/20140929-14-P-0363.pdf

More Action Is Needed to Protect Water Resources From Unmonitored Hazardous Chemicals

What We Found

Management controls put in place by the EPA to regulate and control hazardous chemical discharges from sewage treatment plants to water resources have limited effectiveness. The EPA regulates hazardous chemical discharges to and from sewage treatment plants, but these regulations are not effective in controlling the discharge of hundreds of hazardous chemicals to surface waters such as lakes and streams. Sewage treatment plant staff do not monitor for hazardous chemicals discharged by industrial users. This is due to a general regulatory focus on the priority pollutants list that has not been updated since 1981, limited monitoring requirements, limited coordination between EPA offices, a lack of tracking hazardous waste notifications required for submittal by industrial users, or a lack of knowledge of discharges reported by industrial users under the Toxics Release Inventory. Except for EPA Region 9, sewage treatment plant permits generally include very few monitoring requirements or effluent limits, which can limit enforcement actions.

EPA does not have mechanisms to address discharge of hazardous chemicals into water resources.

The EPA developed whole effluent toxicity test results as a mechanism to identify toxic chemicals such as hazardous discharges to sewage treatment plants. However, these are not required for all permits, and are not tracked by the EPA to verify that sewage treatment plants are reporting results as required. Moreover, exceedances of chemical limits in permits and toxicity tests do not trigger notification to enforcement programs. Consequently, the EPA may not be aware of chemical discharge or toxicity exceedances that should be addressed to minimize potentially harmful contamination of water resources.

Recommendations and Planned Agency Corrective Actions

We recommend that the EPA develop a format for sharing annual Toxics Release Inventory data, develop a list of chemicals beyond the priority pollutants list for inclusion in permits, confirm compliance with the hazardous waste notification requirement, and track required submittals of toxicity tests and violations. The agency suggested a change to one recommendation, which the OIG accepted. All recommendations are resolved.

Noteworthy Achievements

The EPA has designed the Discharge Monitoring Report Pollutant Loading Tool to provide access to surface water discharge and other data.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

September 29, 2014

MEMORANDUM

SUBJECT: More Action Is Needed to Protect Water Resources From
Unmonitored Hazardous Chemicals
Report No. 14-P-0363

FROM: Arthur A. Elkins Jr.

A handwritten signature in black ink, appearing to read "Arthur A. Elkins Jr.", is written over the printed name.

TO: Ken Kopocis, Deputy Assistant Administrator
Office of Water

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

The EPA office having primary jurisdiction over the issues evaluated in this report is the Office of Water's Office of Wastewater Management.

Action Required

You are not required to provide a written response to this final report, because you agreed to all recommendations and provided corrective actions and completion dates that meet the intent of the recommendations. All recommendations are resolved and open with corrective actions ongoing.

Should you choose to provide a response to this final report, we will post your response on the OIG's public website, along with our memorandum commenting on your response. You should provide your response as an Adobe PDF file that complies with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended. The final response should not contain data that you do not want to be released to the public; if your response contains such data, you should identify the data for redaction or removal along with corresponding justification.

We will post this report to our website at <http://www.epa.gov/oig>.

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Chapter 1

Introduction

Purpose

The purpose of this evaluation was to determine the effectiveness of the U.S. Environmental Protection Agency's (EPA's) programs in preventing and addressing contamination of surface water from hazardous wastes passing through publicly owned treatment works (POTWs – hereafter also referred to as sewage treatment plants¹). This included examining the EPA's role and oversight of hazardous chemical² discharges to sewage treatment plants, and determining the effectiveness of the EPA's management controls in regulating hazardous chemical discharges from sewage treatment plants to surface water. We asked the following questions:

- Does the EPA regulate hazardous chemical discharges to and from sewage treatment plants?
- Do sewage treatment plants monitor discharges for hazardous chemicals?
- Has the EPA taken actions to address discharges of hazardous chemicals to and from sewage treatment plants?

Background

Hazardous waste has properties that make it dangerous or capable of having a harmful effect on human health and the environment. Hazardous wastes are regulated by the EPA under the Resource Conservation and Recovery Act (RCRA). RCRA Subtitle C regulations address the generation, transportation, and treatment, storage, or disposal of hazardous wastes. However, under the RCRA domestic sewage exclusion, hazardous wastes discharged to sewage treatment

¹ The EPA defines a POTW as a treatment works owned by a state or municipality. This definition includes systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. In their technical comments on the draft report, the EPA states that the term publicly owned treatment works “is specifically defined at 40 CFR 403.3(q) and section 212 of CWA as a treatment works which is owned by a State or municipality. This term specifically includes the sewers, pipes, and conveyance system if and only if they convey wastewater to a POTW Treatment Plant.” They also point out that NPDES regulations at 40 CFR 122.2 do not contain the term “sewage treatment plant.” We use the term “sewage treatment plant” in this report in place of “publicly owned treatment works” because we believe it is more understandable to a non-technical reader.

² The term “hazardous chemical” is used in this report to refer to chemicals that, if managed under the EPA hazardous waste program, would be considered hazardous waste. Because hazardous waste discharged to sewage treatment plants is no longer considered hazardous waste, this term is used minimally in this report.

plants are not regulated by RCRA once they enter the sewer. Rather, they are regulated under the Clean Water Act (CWA).

The CWA was passed in 1972 to restore and maintain the chemical, physical and biological integrity of the nation's waters. The goals of the CWA are to eliminate the introduction of pollutants into the nation's waters and to achieve fishable and swimmable water quality. The CWA's National Pollutant Discharge Elimination System (NPDES) program represents one of the key components established to accomplish the goals of the CWA. This program requires that direct dischargers³ to surface waters such as streams, lakes, and oceans obtain an NPDES⁴ permit (hereafter "discharge permit").

A sewage treatment plant is generally designed to treat typical household waste, biodegradable commercial waste, and biodegradable industrial waste. However, all users may also discharge toxic or non-conventional pollutants that the sewage treatment plant is neither designed for nor able to remove. To ensure the goals of the CWA are met, industrial and commercial users are required to comply with pretreatment standards. Sewage treatment plants that discharge to the waters of the United States must obtain a discharge permit. These permits include requirements for discharge monitoring for specific chemicals, monitoring frequency, effluent limits, and discharge toxicity tests. The sewage treatment plant regulates discharges of industrial users through the CWA pretreatment program. The CWA established the National Pretreatment Program to address discharges from industrial users to sewage treatment plants. Figure 1 (next page) illustrates the discharges of the industrial users to the sewage treatment plant, and discharges of the sewage treatment plant to surface waters, and also identifies some permitting and reporting requirements.

EPA guidance defines pretreatment as "The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater before or in lieu of discharging, or otherwise introducing, such pollutants into a POTW." EPA guidance from 2004 states that, as part of their implementation of the industrial pretreatment program, municipal officials should ensure that industrial users control and properly manage their hazardous waste. This guidance further states that hazardous wastes discharged to sewers are "subject to the CWA, must be reported to the POTW, and should meet all applicable categorical and local discharge limits."

³ According to the EPA, a direct discharger is "A point source that discharges a pollutant(s) to waters of the United States, such as streams, lakes, or oceans," and includes sewage treatment plants. EPA considers indirect dischargers "facilities that discharge their wastewaters to a POTW."

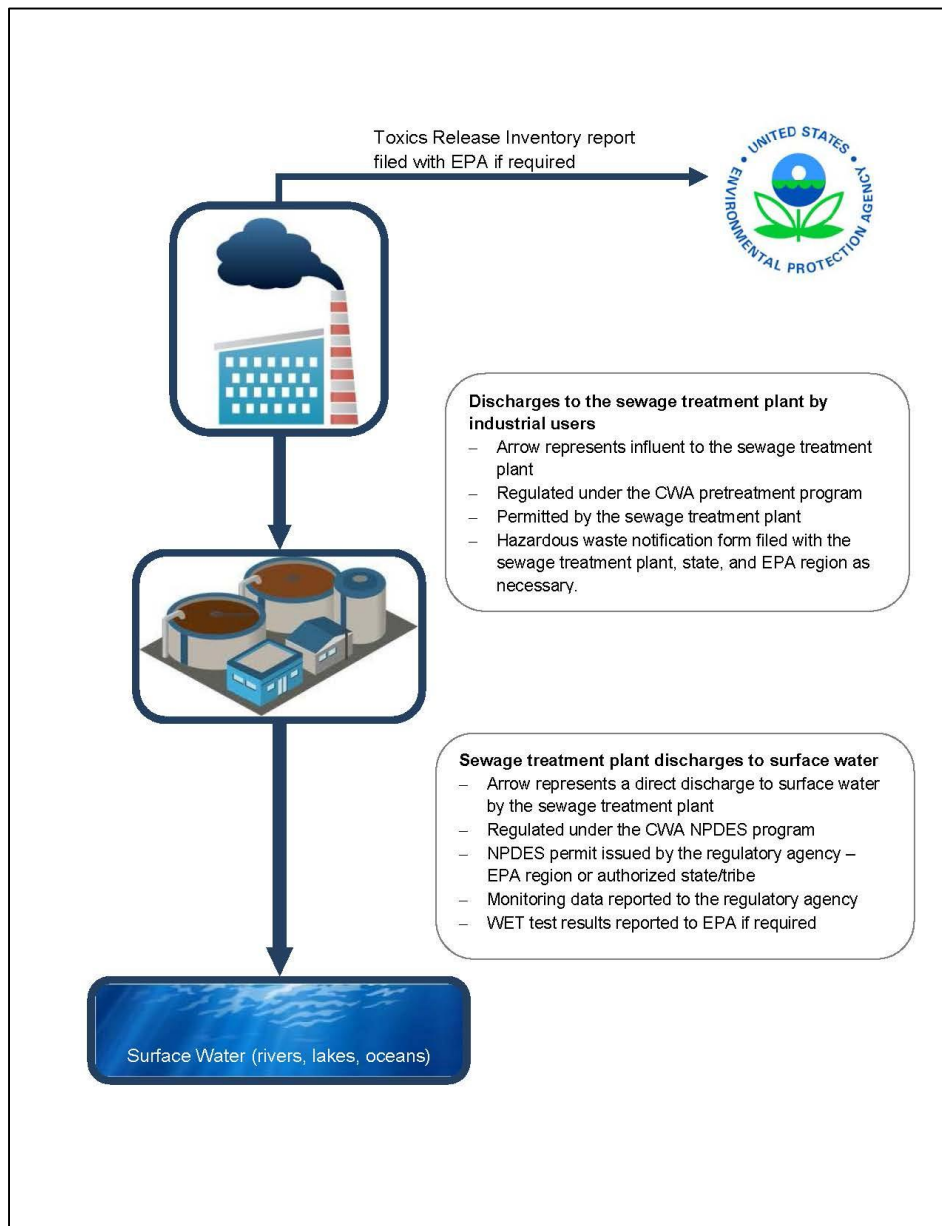
⁴ According to the EPA, the NPDES is the national program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing discharge permits from point sources to waters of the United States, and imposing and enforcing pretreatment requirements under the CWA. In this report, we use the term "discharge permit" instead of "NPDES permit" except in direct quotes.

The general pretreatment regulations establish responsibilities among federal, state, and local government; industry; and the public to implement pretreatment standards to control pollutants that pass through or interfere with sewage treatment plant treatment processes or that can contaminate sewage sludge. The pretreatment program focuses on 126 priority pollutants with defined test methods. According to EPA regulations⁵, all major sewage treatment plants (sewage treatment plants with a design flow rate equal to or greater than one million gallons per day) and sewage treatment plants with approved or developing pretreatment programs are required to submit the results of a monitoring scan for a modified list of the priority pollutants at least once every 5 years when the sewage treatment plant's permit is renewed.

Thirty six states have an approved State Pretreatment Program.

⁵ 40 CFR 122.21(j)(4)(A) and (B).

Figure 1: Diagram of industrial discharges to and from sewage treatment plants



Source: OIG analysis.

The EPA’s 1986 *Report to Congress on the Discharge of Hazardous Wastes to Publicly Owned Treatment Works* clarified that the basis of the domestic sewage exclusion is not that hazardous wastes discharged to sewer are rendered harmless, but rather that sufficient regulatory controls existed through the CWA pretreatment program. The report emphasized four recommendations:

1. Additional research, data collection, and analysis are necessary to fill information gaps on sources and quantities of hazardous wastes, their fate and effects in sewage treatment systems and the environment, and the design of any additional regulatory controls which might be necessary.

2. Improvements could be made to standards and pretreatment controls of hazardous wastes discharges to sewage treatment plants.
3. EPA should utilize existing water programs to improve control of hazardous wastes discharged to sewage treatment plants.
4. RCRA, the Comprehensive Environmental Response, Compensation and Liability Act, and the Clean Air Act should be considered along with the CWA to regulate hazardous waste discharges to sewage treatment plants if the studies in recommendation 1 indicate problems.

The EPA developed regulations⁶ in accordance with the 1986 Report to Congress, “to improve control of hazardous wastes introduced into POTWs under the Domestic Sewage Exclusion.” These regulations included various restrictions on discharges by industrial users to sewage treatment plants as well as various permitting and reporting requirements for industrial users and sewage treatment plants. These regulations also included a notification provision:⁷ “The Industrial User shall notify the POTW, the EPA Regional Waste Management Division Director, and State hazardous waste authorities in writing of any discharge into the POTW of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR part 261.” An industrial user is required to submit a one-time notification for discharges of more than 15kg of hazardous waste in any month, or any amount of acute hazardous waste⁸. If the discharge exceeds 100kg in any month, the notification should include the hazardous constituents, the constituent mass, and an estimate of the discharge for the next 12 months.

Information on some hazardous chemical discharges to sewage treatment plants is available from the EPA’s Toxics Release Inventory (TRI). Information on discharges from sewage treatment plants is available from the EPA’s Discharge Monitoring Report (DMR) Pollutant Loading Tool. The TRI program tracks the management of certain toxic chemicals that may pose a threat to human health and the environment. U.S. facilities in different industry sectors must report annually how much of each chemical is released to the environment and/or managed through recycling, energy recovery and treatment. A “release” of a chemical means that it is emitted to the air or water, or placed in some type of land disposal. In general, chemicals covered by the TRI Program are those that cause chronic or acute human health effects or significant adverse environmental effects. The TRI Program currently covers 683 chemicals and chemical categories including many, but not all, hazardous chemicals⁹. TRI filers are required to

⁶ Federal Register Vol. 55, No. 142, July, 24, 1990.

⁷ 40 CFR Part 403.12(p).

⁸ Acute hazardous waste contains such dangerous chemicals that it could pose a threat to human health and the environment even when properly managed.

⁹ TRI chemicals also include many chemicals not listed as hazardous waste.

report the chemicals that are released or transferred from their facility. The information submitted by facilities is compiled in the TRI.

According to the EPA, the DMR Pollutant Loading Tool¹⁰ is designed to determine “who is discharging, what pollutants they are discharging and how much, and where they are discharging.” Data are currently available for the years 2007 through 2011. Individuals using the tool can identify sewage treatment plants using a name or partial name, and download data on toxic pollutant loadings for all sewage treatment plants for which data has been entered.

The following offices are responsible for EPA programs related to the evaluation of hazardous discharges by sewage treatment plants:

- The Office of Wastewater Management in the Office of Water oversees a range of programs contributing to the well-being of the nation’s waters and watersheds.
- The Office of Resource Conservation and Recovery in the Office of Solid Waste and Emergency Response implements RCRA.
- The Office of Information Analysis and Access in the Office of Environmental Information oversees the TRI program.
- The Office of Civil Enforcement in the Office of Enforcement and Compliance Assurance develops and prosecutes administrative civil and judicial cases and provides legal support for cases and investigations initiated in EPA regions.
- The Office of Compliance in the Office of Enforcement and Compliance Assurance manages the ICIS-NPDES data system and the DMR Pollutant Loading Tool.
- The Office of Criminal Enforcement, Forensics and Training investigates violations of environmental laws and provides a broad range of technical and forensic services for civil and criminal investigative support and council on legal and policy matters.

Scope and Methodology

We conducted our work from March 2013 to June 2014. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and

¹⁰ This tool is available to the public at <http://cfpub.epa.gov/dmr/index.cfm>. The tool uses DMR data from EPA's Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES) to calculate pollutant discharge amounts.

conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We interviewed EPA headquarters staff, in the Office of Resource Conservation and Recovery in the Office of Solid Waste and Emergency Response, the Toxics Release Inventory Program Division in the Office of Environmental Information, the Office of Wastewater Management in the Office of Water, and the Office of Enforcement and Compliance Assurance. We also interviewed regional Pretreatment Coordinators and staff in EPA Regions 2, 3, 5, 6 and 9 about specific discharges to and from sewage treatment plants. We analyzed regional data on specific discharges not tracked through the (NPDES) discharge permit monitoring using TRI and the Discharge Monitoring Report Pollutant Loading Tool.

To analyze hazardous chemical discharges to sewage treatment plants, we obtained quantitative data for discharges of hazardous chemicals to all sewage treatment plants reported in the 2011 EPA TRI. TRI data from 2011 were the most current data available when we performed the analyses. We identified the largest dischargers of hazardous chemicals from 2011 TRI data. We then used the TRI forms to identify the receiving sewage treatment plant, and determined if the hazardous chemicals were monitored in the sewage treatment plant's (NPDES) discharge permit by analyzing permit data from the EPA's Discharge Monitoring Report Pollutant Loading Tool.

We reviewed EPA programs, regulations, and guidance documents related to industrial dischargers and sewage treatment plants, the CWA and its implementing regulations, RCRA Codes and Domestic Sewage Exclusion, (NPDES) discharge permit and listed chemicals, and the EPA's local limits guidance. We reviewed 2011 TRI hazardous chemical discharges to sewage treatment plants for the selected regions to determine whether EPA/regions/states/sewage treatment plant staff are aware of these discharges and if these are monitored and tracked. In our interviews with EPA and state staff in the offices mentioned above, we asked targeted questions regarding sewage treatment plant monitoring, priority pollutants, whole effluent toxicity tests, hazardous waste notification forms, and enforcement actions on exceedances.

Prior Evaluation Coverage

The following EPA Office of Inspector General (OIG) reports addressed issues related to pretreatment and TRI reporting:

- Report No 2004-P-00030, *EPA Needs to Reinforce Its National Pretreatment Program*, issued September 28, 2004.
- Report No 2004-P-00004, *EPA Should Take Steps to Improve Industrial Reporting to the Toxics Release Inventory System*, issued February 2, 2004.

Chapter 2

EPA Has Not Taken Actions to Address Discharges of Hundreds of Hazardous Chemicals From Sewage Treatment Plants

The EPA regulates discharges to and from sewage treatment plants, but these regulations are not effective in controlling the discharge of hundreds of hazardous chemicals to surface waters such as lakes and streams. Sewage treatment plant staff do not monitor for hazardous chemicals discharged by industrial users. This is the result of factors we observed, including a general regulatory focus on the priority pollutants list that has not been updated since 1981, limited monitoring requirements, limited coordination between EPA offices, a lack of tracking hazardous waste notifications required for submittal by industrial users, or a lack of awareness of discharges reported by industrial users under the Toxics Release Inventory. Except for EPA Region 9, sewage treatment plant permits generally include very few monitoring requirements, which can limit enforcement actions. Whole effluent toxicity tests were developed by the EPA as a mechanism to identify toxic chemicals such as hazardous waste. However, these toxicity tests are not required for all permits, and are not tracked by the EPA to verify that sewage treatment plants are reporting results as required. Moreover, exceedances of chemical limits in permits and toxicity tests do not trigger notification to enforcement programs. Consequently, the EPA may not be aware of exceedances that should be addressed to minimize potentially harmful contamination of water resources.

EPA Does Not Clearly Identify and Regulate Hazardous Chemical Discharges From Sewage Treatment Plants

Priority Pollutants List Not Updated Since 1981

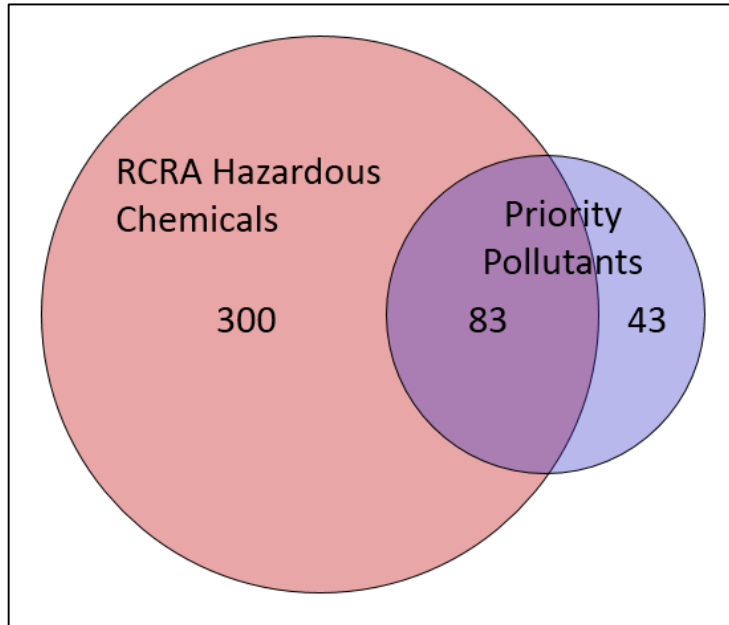
As a result of a suit filed by several environmental groups against the EPA in 1975, the EPA agreed to regulate the discharge of 65 categories of pollutants comprising 126 priority pollutants from 21 industrial categories. Despite changes in the list of regulated industrial categories and the number of pollutants discharged, the EPA has not updated the list of 126 priority pollutants since 1981.

Hundreds of RCRA Hazardous Chemicals are Not Listed as Clean Water Act Priority Pollutants

Figure 2 compares the RCRA hazardous chemicals with those on the CWA priority pollutants list. There are 83 RCRA hazardous chemicals that are also included on the CWA priority pollutants list. However, there still remain about 300 RCRA hazardous chemicals not included on the CWA priority pollutants list.

This illustrates the large number of RCRA hazardous chemicals not monitored by sewage treatment plants in their discharge permits, including many acute hazardous wastes such as pesticides, metals and organic solvents.

Figure 2: RCRA hazardous chemicals overlap with CWA priority pollutants listed chemicals¹¹



Source: OIG analysis.

Agency Staff Uncertain About Regulating Beyond 33-Year Old Clean Water Act Priority Pollutants

The CWA gives the EPA authority to regulate “any pollutant” through a discharge permit. At the same time, the CWA incorporates the priority pollutants list into law and requires that effluent limitations be promulgated for the chemicals on the list. This has created a focus on the CWA priority pollutants list for discharge permits.

Some EPA staff, including enforcement staff, stated that the EPA has the authority to regulate any chemical necessary to achieve water quality standards. However, other staff within the EPA and states expressed different opinions about regulating chemicals beyond the list of priority pollutants. For example:

- Monitoring for specific chemicals by a sewage treatment plant is not required because the chemicals are not on the list of priority pollutants.
- Monitoring for specific chemicals is not required because the chemicals are not on the state list of chemicals identified for monitoring.

¹¹ The number of RCRA hazardous waste chemicals in this diagram includes chemicals specifically listed by EPA as hazardous wastes or acute hazardous wastes.

- Chemicals cannot be in a discharge permit if they are not on the list of priority pollutants.
- Discharge permits are designed to primarily regulate chemicals on the list, although programs do have the authority to regulate beyond the list.
- Sewage treatment plants probably focus on priority pollutants because the state and EPA focuses on them.

According to the CWA, discharge permits may be issued for a term of up to 5 years. According to EPA staff, as part of the renewal application process, sewage treatment plants screen for the 126 priority pollutants. Based on the data submitted, the permit writer then determines whether there is a reasonable potential for any of the pollutants to impact the water quality of the receiving water body. Only those pollutants identified as a concern are put in the permit either with limits or for monitoring only. Thus, discharge permits remain more focused on the priority pollutants list than on the CWA's broader authority to regulate any pollutant that impairs water quality. As a result, other chemical discharges not included on the priority pollutants list, such as many RCRA hazardous wastes, are not monitored. Lack of monitoring or limits for these chemicals may result in contamination of surface waters.

Industrial Users' Hazardous Waste Discharge Reports May Not Have Been Submitted as Required

Under the general pretreatment regulations, industrial users are required to notify the sewage treatment plant, the EPA Regional Waste Management Division Director, and state hazardous waste authorities in writing of any discharge into the sewage treatment plant of a substance, which, if otherwise disposed of, would be a hazardous waste. This refers to RCRA hazardous wastes. However, when we asked EPA staff about these notifications, there was a general lack of awareness of the requirement.

During interviews with EPA staff in headquarters, and Regions 2, 3, 5, 6 and 9, as well as state staff, we asked if the hazardous waste notifications had been submitted as required and if they were tracked. We received various responses, including:

- EPA regional and sewage treatment plant staff stated that the discharges are not considered hazardous waste so this notification was not required.
- One EPA region believed that based on information available through the pretreatment program, the notification did not have to be submitted. The region also stated that failure to notify, or to discharge hazardous wastes would be met with enforcement action, and that is the deterrent.

- The pretreatment coordinator of another EPA region noted that he had seen the notification forms some time ago and that they perform annual archives of the sewage treatment plant files.
- Two states in one EPA region with authorized state programs informed us that the discharger files the hazardous waste discharge notification. However, one of the states indicated the notifications do not go to the region, but rather to the state hazardous waste office and the sewage treatment plant.
- One EPA region was unfamiliar with the notification requirements and had not seen notifications from industrial users for discharging hazardous waste to sewage treatment plants.

In the 1990 final rule that established the notification requirement, the EPA noted that “There is currently no regulatory requirement that industrial users report the discharge of all hazardous wastes to sewers.” The final rule further stated that the information provided by the hazardous waste notification “is needed for the ultimate development by POTWs of controls to prevent pass through and interference.” In addition, the rule indicated the agency was considering the development of a database of notification information that would make the information available in a usable format for interested parties. Based on our interviews with the EPA and states, the notification is not providing information to the sewage treatment plants as intended. Not only is there no database of the information, we found that no compilation of the notification forms was available in the regions and states we interviewed. Further, there is a general lack of knowledge of the requirement, and no reliance upon or use of the notifications by the sewage treatment plants to manage the discharge of hazardous wastes.

Sewage Treatment Plants Monitor for Few Toxic Chemicals

Number of Chemicals Monitored by EPA Regions Varies Widely

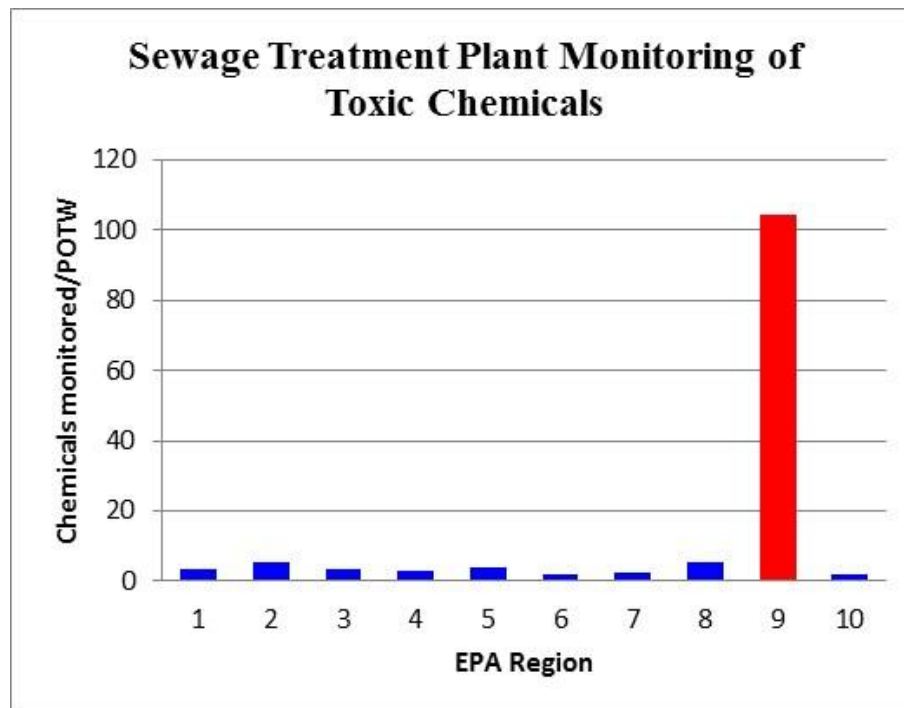
According to EPA staff, while sewage treatment plants are required to perform a monitoring scan for all 126 CWA priority pollutants once every 5 years, the EPA does not require that all 126 priority pollutants be included on a sewage treatment plant’s DMR. Analysis of DMR data reported to the EPA reveals large regional differences in the number of chemicals¹² monitored and reported on the DMR. Sewage treatment plant discharge permits within Region 9 require monitoring for many more toxic chemicals as compared to other regions. For example acrolein, which is an acute RCRA hazardous waste and is also a priority pollutant, is monitored by a total of 194 sewage treatment plants nationwide. Of these sewage treatment plants, 193 are in Region 9. Region 9 stated that monitoring can assist

¹² These are chemicals for which the EPA has developed a toxicity weighting factor in the Discharge Monitoring Report Pollutant Loading Tool, which includes many hazardous waste chemicals.

with identifying chemicals that need a limit set during the next discharge permit term.

The extent of the disparity of regional discharge monitoring requirements and reporting is illustrated in Figure 3. Region 9's states require an average of more than 104 chemicals/sewage treatment plant, while other regions require an average of fewer than four chemicals/sewage treatment plant.

Figure 3: Number of toxic chemicals monitored per sewage treatment plant by EPA region



Source: OIG analysis of data from the EPA's DMR Pollutant Loading Tool.

Lack of Data in Discharge Permits Can Hamper Enforcement

Enforcement actions against a sewage treatment plant due to pass through of chemicals from the sewage treatment plant into the receiving water body can be taken when there is a violation of any requirement of the sewage treatment plant's discharge permit. According to the Code of Federal Regulations (CFR) in 40 CFR §403.3(p), "The term *Pass Through* means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation)." As a result, enforcement action relies on pollutants and limits documented in a discharge permit. Without monitoring or limits in place, certain pollutants may be discharged by the sewage treatment plant and potentially harm human health and the environment.

Region 9 staff did not have an explanation for the additional monitoring performed by sewage treatment plants in their region. We did find examples of additional monitoring of chemicals by sewage treatment plants outside of Region 9 states, but the monitoring results were not included in the DMRs. Staff in one EPA region stated that information on chemicals not reported in the DMRs are available in annual sewage treatment plant reports. However, including monitoring data in discharge permits, as Region 9 does, provides regulators with the ability to readily identify chemicals in need of discharge limits and identify and enforce pass through violations. Further, the discharge permits for Region 9 states' sewage treatment plants include more hazardous chemicals than the sewage treatment plant discharge permits in other states.

Discharge Permit and Pretreatment Programs Do Not Always Coordinate

EPA regions directly implement discharge permit programs in the four states that have not received program authorization. EPA still retains oversight authority for states with authorized programs. Pretreatment programs may also be authorized to states; however some states have been authorized to implement the discharge permit program but not the pretreatment program. In some cases, this has resulted in separate organizations managing the discharge permit and pretreatment programs. In these cases the pretreatment programs may not provide input to identify the chemicals that should be included for monitoring in the discharge permits.

EPA Office of Water staff stated that the pretreatment and discharge programs do not necessarily coordinate efforts during the discharge permit application review and issuance process. Staff in the Office of Water noted that the pretreatment coordinators do not appear to have the role they should during the permit writing process and acknowledged that there is an issue with coordinated efforts between the programs for permit quality review. As a result, the pretreatment program staff may not have been included in determining which chemicals should be included in the sewage treatment plant discharge permits. This could result in the absence of pretreatment controls in the discharge permits, which impacts what is or is not being monitored for by sewage treatment plants in their discharge permits. Pretreatment enforcement staff in one region specifically noted that they did not have the opportunity to review the draft discharge permits before they were issued.

Whole Effluent Toxicity Test Not Effectively Used for Monitoring and Enforcement

In the 1980s, the EPA recognized that some sewage treatment plant discharges remained toxic despite pretreatment programs which were designed to prevent pass through of specific chemicals. As a result, the EPA developed a control to reduce or eliminate toxic discharges based on whole effluent toxicity (WET)

testing. According to EPA regulations¹³, sewage treatment plants with flow rates equal to or greater than one million gallons per day, or sewage treatment plants with pretreatment program requirements, must submit three WET test results taken within a four and one-half year period prior to the date of the discharge permit application. EPA staff stated that WET test results are an integral tool in the assessment of water quality. When a WET test exceedance is encountered, the sewage treatment plant conducts a series of additional tests to identify the toxic pollutants and their source so pass through can be eliminated.

During our interviews, EPA staff repeatedly stated that the WET tests provide a suitable backup mechanism for identifying possible discharges of hazardous waste. However, according to data supplied by EPA¹⁴ we found that WET test reporting requirements and tracking of the results do not provide backup for possible discharges (Figure 4):

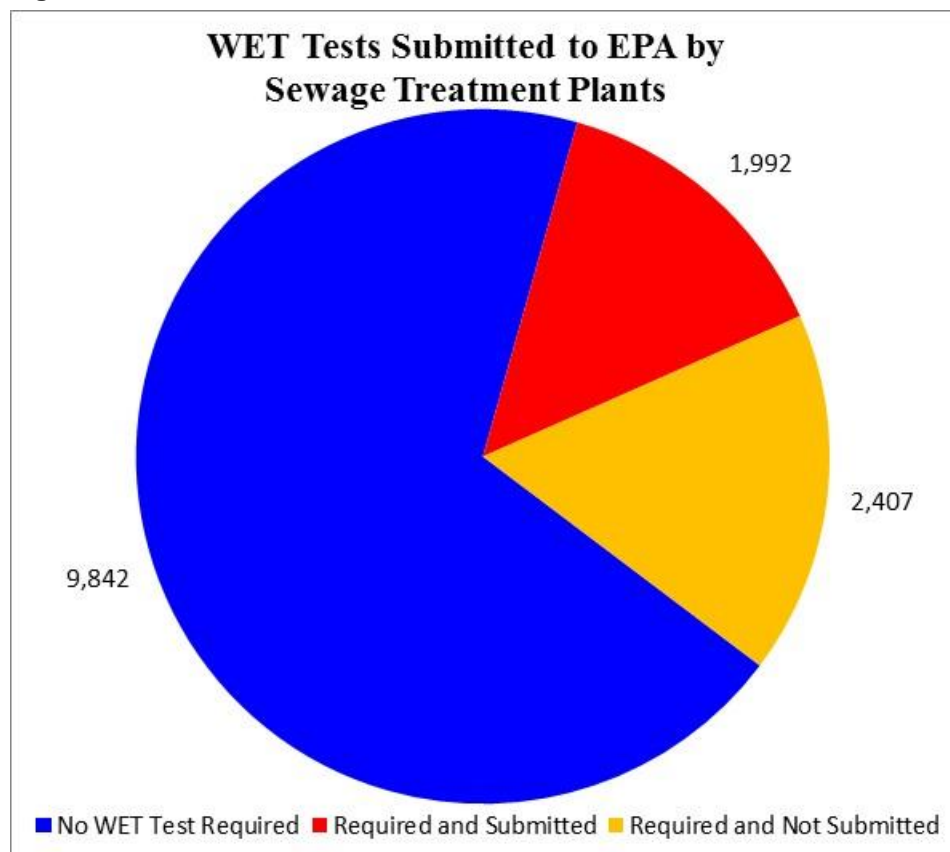
- Not all sewage treatment plants are required to report– According to the EPA, during 2011 there were 14,241 active sewage treatment plants nationwide. However, only 4,399 (31 percent) of these were required to report WET test results. Reporting was not required for 9,842 (69 percent) of the sewage treatment plants, which significantly restricts any use of the WET test as a backup mechanism to identify hazardous chemical discharges.
- Only about half of the sewage treatment plants report as required – Of the 4,399 required to report, only 1,992 (45 percent) submitted WET test results. According to EPA staff, not all data may be entered into the data system. Therefore, more sewage treatment plants may have completed the required WET test, and 1,992 reflects those WET test submittals entered.
- No system controls automatically track required submittals or exceedances – According to EPA staff, there are no mechanisms for the automatic identification, tracking, and follow-up of required WET test submittals or exceedances. This limits the effectiveness of WET test in identifying releases of unidentified chemicals such as hazardous waste.

According to the Office of Water, the permitting authority determines the WET test requirements and frequency. Office of Water staff also acknowledged that monitoring is important as it improves the chances of identifying toxic chemicals such as hazardous wastes. The lack of regular reporting, tracking, and follow-up on WET test exceedances limits the ability of WET tests to provide a mechanism to identify discharges of hazardous chemicals that may not otherwise have been identified by the sewage treatment plant.

¹³ 40 CFR 122.21(j)

¹⁴ Data were from EPA's ICIS-NPDES database.

Figure 4: WET Test Results



Source: OIG analysis of data supplied by EPA staff.

Hazardous Chemical Sewage Treatment Plant Discharges Identified in TRI Not Monitored

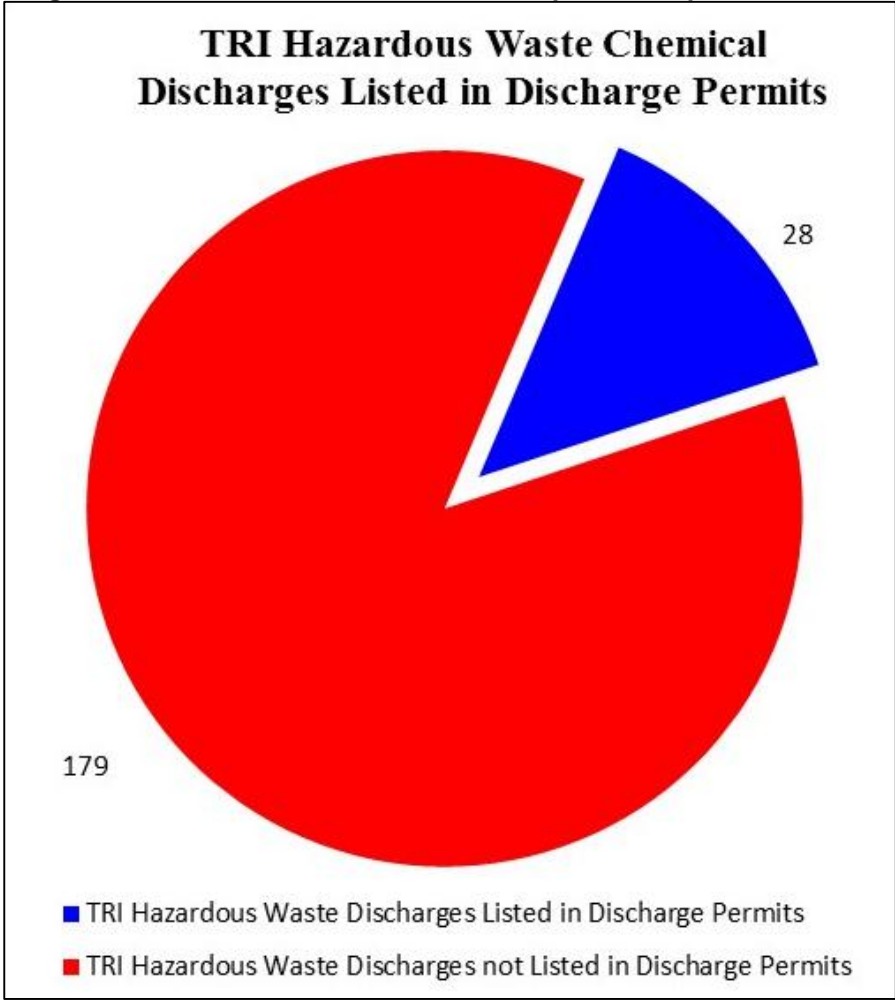
Although TRI reporting does not include all industrial users discharging to sewage treatment plants or all hazardous chemicals, it is a source of data readily available to identify discharges of hazardous wastes to sewage treatment plants. We used 2011¹⁵ TRI data to query EPA regions, states, and/or sewage treatment plants to determine their awareness and management of TRI hazardous chemical discharges. We identified hazardous chemicals discharged by TRI reporters to sewage treatment plants. We initially identified 731 discharges of hazardous chemicals, and narrowed this list down to 207 discharges by eliminating TRI reporters with small volume discharges. We found that sewage treatment plants monitor for few of the chemicals. Of the 207 discharges identified, only 28

¹⁵ At the time of our analysis, data from 2011 were the most current available from TRI and the Discharge Monitoring Report Pollutant Loading Tool.

(14 percent) were chemicals monitored on the sewage treatment plants' discharge permits (Figure 5).

We further analyzed data for a small number of sewage treatment plants to examine reasons hazardous chemicals are not monitored. We selected eight sewage treatment plants for additional follow-up based on the high TRI discharge volume and number of TRI hazardous chemicals that were not monitored in their

Figure 5: TRI hazardous waste chemicals present in permits



Source: OIG analysis of data from TRI and the EPA's DMR Pollutant Loading Tool.

discharge permits. We had discussions with the EPA region, authorized state, and/or the sewage treatment plant to determine if they were aware of the TRI discharges and determine why the chemicals were not included in the discharge permits. We found the eight sewage treatment plants did monitor for 14 of the 50 (28 percent) chemicals identified. However, the monitoring was not required by the sewage treatment plant discharge permits, and was not reported to EPA.

More importantly, the eight sewage treatment plants did not monitor for 36 of the 50 (72 percent) hazardous chemicals identified, which included some acute hazardous chemicals. We received a range of responses for the sewage treatment plants' lack of monitoring, including:

- Monitoring of the chemicals was not necessary because the chemicals in question should be metabolized and rendered harmless in the sewage treatment process.
- Monitoring of the chemicals was not required because the chemicals had been monitored in past years and the discharges were inconsequential. In some cases this was between 7 and 24 years ago.
- No response for why specific chemicals were not monitored.
- Chemicals were not monitored because they were not on the list of priority pollutants or a state list.
- Data were submitted on an annual report to the state.
- Discharges from the sewage treatment plant were not monitored because the influent from the industrial users was monitored.

These responses indicate that sewage treatment plants are not always monitoring chemical discharges, which could result in their release to the environment and impair appropriate enforcement. The sewage treatment plants did not routinely review the TRI data to ensure complete knowledge of the discharges from their respective industrial users. Although there is no requirement that sewage treatment plants use TRI data, we believe these data could provide a useful resource. Discharge permit writers, pretreatment authorities and sewage treatment plants could utilize TRI data to enhance their knowledge of all industrial user discharges. This would help ensure that permits accurately represent known discharges, mitigating the risk of potential release of these chemicals into the environment.

Exceedances in Discharge Monitoring Reports Do Not Automatically Trigger Follow-up

Although sewage treatment plants report annual monitoring data in Discharge Monitoring Reports, there is no automatic trigger in EPA information systems to notify enforcement staff of chemical exceedances. According to the EPA, to identify exceedances in violation of discharge permit limits, an exceedance report from the Discharge Monitoring Report must be manually generated. Thus, enforcement and oversight of chemical exceedances rely on the individual review of exceedance reports by states or the EPA. As a result, exceedances of discharge permit limits may not be identified or reviewed. This could result in the potential undetected discharge of chemicals beyond their defined maximum levels.

Conclusions

Management controls put into place by the EPA to regulate and control hazardous chemical discharges from sewage treatment plants to water resources are not always effective. According to interviews with the EPA's enforcement and permitting staff, states and sewage treatment plant operators, all parties are not always aware of all hazardous chemical discharges flowing into and out of the sewage treatment plant. In addition, most hazardous chemical discharges we identified in selected sewage treatment plants are not monitored by the sewage treatment plants. As a result, sewage treatment plants may not be adequately treating wastewater entering their facilities and are at risk of discharging hazardous chemicals into receiving bodies of water such as rivers and streams. These hazardous chemical discharges can have detrimental effects on human health and the environment. The EPA's limited management controls for identifying and monitoring hazardous chemical discharges from sewage treatment plants do not support the CWA's objective to maintain the integrity of the nation's waters.

Recommendations

We recommend that the Assistant Administrator for Water:

1. Develop, in coordination with the Office of Environmental Information, a usable format for sharing TRI data on discharges sent to sewage treatment plants, with OW developing materials to explain the utility of TRI data to NPDES permit writers and pretreatment program personnel. This will include exploring options for an online search tool to more easily identify TRI discharges to specific sewage treatment plants.
2. Develop, in coordination with EPA regions, a list of chemicals beyond the priority pollutants appropriate for inclusion among the chemicals subject to discharge permits. This may include:
 - a. Review of TRI-reported discharges to sewage treatment plants. Initial review could focus on RCRA hazardous chemicals reported in TRI.
 - b. Review of chemicals monitored nationwide in sewage treatment plant discharge permits, especially chemicals monitored by Region 9.
 - c. Review of chemical monitoring data already collected by sewage treatment plants but not included in discharge permits.
 - d. Discussion with the Office of Resource Conservation and Recovery for suggested hazardous chemicals.

- e. Development of mechanisms that ensure discharge and pretreatment programs coordinate during discharge permit writing.
3. Confirm, in coordination with the Office of Enforcement and Compliance Assurance and EPA regions, that sewage treatment plants and their industrial users are aware of and comply with the 40 CFR 403.12(p) requirement that industrial users submit hazardous waste notifications.
 4. Develop, in coordination with the Office of Enforcement and Compliance Assurance, mechanisms to:
 - a. Improve sewage treatment plant compliance with permit terms that require submission of WET monitoring results to the permitting authority.
 - b. Facilitate the use of monitoring data to track facilities that have violated chemical or WET permit exceedance requirements.

Agency Response and OIG Evaluation

The agency agreed with recommendations 2, 3, and 4. They disagreed with recommendation 1 but suggested a minor revision which meets the intent of the recommendation. All recommendations are resolved. The agency provided corrective action plans with milestone dates for all recommendations. Based on the agency's response, all recommendations are open with corrective actions underway. The Agency provided the planned completion date of 9/30/15 for all recommendations. Appendix A contains the agency's response to our draft report and planned actions to address our recommendations. We reviewed the agency's technical comments and made revisions to the report as appropriate.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS						POTENTIAL MONETARY BENEFITS (in \$000s)	
Rec. No.	Page No.	Subject	Status ¹	Action Official	Planned Completion Date	Claimed Amount	Agreed-To Amount
1	18	Develop, in coordination with the Office of Environmental Information, a usable format for sharing TRI data on discharges sent to sewage treatment plants, with OW developing materials to explain the utility of TRI data to NPDES permit writers and pretreatment program personnel. This will include exploring options for an online search tool to more easily identify TRI discharges to specific sewage treatment plants.	O	Assistant Administrator for Water	09/30/15		
2	18	Develop, in coordination with EPA regions, a list of chemicals beyond the priority pollutants appropriate for inclusion among the chemicals subject to discharge permits. This may include: <ul style="list-style-type: none"> a. Review of TRI-reported discharges to sewage treatment plants. Initial review could focus on RCRA hazardous chemicals reported in TRI. b. Review of chemicals monitored nationwide in sewage treatment plant discharge permits, especially chemicals monitored by Region 9. c. Review of chemical monitoring data already collected by sewage treatment plants but not included in discharge permits. d. Discussion with the Office of Resource Conservation and Recovery for suggested hazardous chemicals. e. Development of mechanisms that ensure discharge and pretreatment programs coordinate during discharge permit writing. 	O	Assistant Administrator for Water	09/30/15		
3	19	Confirm, in coordination with the Office of Enforcement and Compliance Assurance and EPA regions, that sewage treatment plants and their industrial users are aware of and comply with the 40 CFR 403.12(p) requirement that industrial users submit hazardous waste notifications.	O	Assistant Administrator for Water	09/30/15		
4	19	Develop, in coordination with the Office of Enforcement and Compliance Assurance, mechanisms to: <ul style="list-style-type: none"> a. Improve sewage treatment plant compliance with permit terms that require submission of WET monitoring results to the permitting authority. b. Facilitate the use of monitoring data to track facilities that have violated chemical or WET permit exceedance requirements. 	O	Assistant Administrator for Water	09/30/15		

O = Recommendation is open with agreed-to corrective actions pending.

C = Recommendation is closed with all agreed-to actions completed.

U = Recommendation is unresolved with resolution efforts in progress.

Agency Response to Draft Report

(Dated July 28, 2014)

MEMORANDUM

SUBJECT: Response to Office of Inspector General Draft Report/Project No. OPE-FY13-0015
“More Action Is Needed to Protect Water Resources from Unmonitored
Hazardous Waste,” dated June 27, 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

TO: Arthur A. Elkins Jr.
Inspector General

Thank you for the opportunity to respond to the issues and recommendation in the subject Draft Report. Following is a summary of the Agency’s overall position, along with its position on each of the Draft Report’s recommendations. For the Draft Report’s recommendations with which the agency agrees, we have provided high-level intended corrective actions and estimated completion dates. For the report recommendation with which the agency does not agree, we have explained our position and proposed an alternative to the recommendation. For your consideration, we have included a Technical Comments Attachment to supplement this response.

AGENCY’S OVERALL POSITION

The EPA agrees that the effectiveness of the National Pollutant Discharge Elimination System (NPDES) permit program and the National Pretreatment Program in preventing and addressing contamination of surface water from hazardous pollutants could be improved. We believe that the current regulatory structure provides for adequate controls to address hazardous pollutants, however, we welcome the IG’s recommendations on potential improvements to the implementation of these programs. While we agree that there is room for improvement, we have some concerns about some of the findings and one of the recommendations.

Generally, OW is concerned that the draft report uses terminology in unconventional manners, inconsistent with the way the same terms are specifically defined in regulations, especially with respect to the term “hazardous waste”. This might have led the OIG to draw inaccurate conclusions. Similarly, readers of the report may also misinterpret both the findings and conclusions as they may rely on their knowledge and application of the regulatory definitions. We recommend that the OIG either use terms consistent with how they are defined in the regulations or clearly state how and why unconventional definitions are being used in the report.

“Hazardous waste” is a term of art under the Resource Conservation and Recovery Act (RCRA) statute, and not a term used in the Clean Water Act (CWA). A RCRA regulation known as the “domestic sewage exclusion” says that waste mixed with sewage cannot be “solid waste,” see 40 CFR 261.4(a)(1). Under RCRA, if a waste is not a “solid waste”, it cannot be a “hazardous waste.” It is therefore regulated by the CWA and not the RCRA. Thus, the use of the term "hazardous waste" in this CWA context is incorrect. Thus, the use of the term “hazardous waste” in the Draft Report’s title and throughout the draft report is incorrect. As an alternative, we suggest the terms “hazardous chemicals” or “hazardous pollutants” could be used.

There are other terms that are misused. Please see the attached Technical Comments for detailed explanation of the apparent misuse of these terms.

The OIG should update the report to clarify its use of these terms and phrases to reflect appropriate legal usage or explain why the OIG is using non-traditional use of legal terms.

OIG Response: The term “hazardous chemical” is used wherever possible, and the use of this term in referring to hazardous waste is footnoted. We have incorporated changes in terminology and explanatory footnotes as needed to address the issues cited in the technical comments.

Below is our consolidated response to the OIG Recommendations. Our response is separated into two sections: Recommendations to which we agree and identify our intended corrective action (OIG Recommendations 2, 3, and 4); and the Recommendation to which we disagree and provide a proposed alternative (Recommendation 1).

AGENCY’S RESPONSE TO REPORT RECOMMENDATIONS

Agreements

No.	Recommendation	High-Level Intended Corrective Action(s)	Estimated Completion by FY
2	<p>Coordinate with EPA regions to develop suggested chemicals, beyond the priority pollutants, for possible inclusion in discharge permits. This may include:</p> <ul style="list-style-type: none"> a. Review of TRI-reported discharges to sewage treatment plants. Initial review could focus on RCRA hazardous chemicals reported in TRI. b. Review of chemicals monitored nationwide in sewage treatment plant discharge permits, especially chemicals monitored by Region 9. 	<p>OW will issue a memorandum to the regions and notify approved pretreatment states describing best practices for how the NPDES permits and the pretreatment programs coordinate. This memorandum will include information on how to access information reported by industries per 40 CFR 403.12 on discharges sent to POTWs, including TRI data and notifications of substances, which, if otherwise disposed of, would be a hazardous waste. The best practices will describe how such data are used by NPDES permit writers and pretreatment program personnel to properly address such pollutants.</p>	09/30/2015

	<p>c. Review of chemical monitoring data already collected by sewage treatment plants but not included in discharge permits.</p> <p>d. Discussion with the Office of Resource Conservation and Recovery for suggested hazardous waste chemicals.</p> <p>e. Develop mechanisms that ensure discharge and pretreatment programs coordinate during discharge permit writing.</p>	<p>In addition, the OW will also review chemicals monitored by POTWs as reported on DMRs and available as in ICIS-NPDES.</p> <p>The OW will also engage in a discussion with staff from ORCR regarding suggested hazardous waste chemicals.</p>	
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No.	Recommendation	High-Level Intended Corrective Action(s)	Estimated Completion by FY
3	<p>Coordinate with Office of Enforcement and Compliance Assurance and EPA regions to confirm sewage treatment plants and industrial users are aware of and comply with the 40 CFR 403.12(p) requirement that industrial users submit hazardous waste notifications.</p>	<p>OECA and OW will issue a joint memorandum to the regions and approved pretreatment states that discusses the requirement to submit notifications per 40 CFR 403.12(p) and 40 CFR 403.12(j) of substances, which, if otherwise disposed of, would be a hazardous waste and to highlight the importance of the notifications in the pretreatment program. The memorandum will also emphasize the Control Authority's responsibility to ensure industrial users are complying with this requirement.</p>	09/30/2015

No.	Recommendation	High-Level Intended Corrective Action(s)	Estimated Completion by FY
4	<p>Coordinate with the Office of Enforcement and Compliance Assurance to develop a mechanism to:</p> <p>a. Improve sewage treatment plant compliance with permit terms that require submission of WET monitoring results to the permitting authority.</p> <p>b. Facilitate the use of monitoring data to track</p>	<p>a. 1.) OECA and OW will develop training materials that explain the importance of WET permit requirements and how to comply with them (e.g., doing required monitoring and completing DMRs). 2.) OECA will post the training materials on WET compliance to the website for the Local Governments Environmental Assistance Network</p>	09/30/2015

	facilities that have violated chemical or WET permit exceedance requirements.	(EPA compliance assistance center, http://lgean.org/). b. OECA will develop an ICIS-NPDES standard report for WET violations and announce the availability of the report to regions and states along with some explanation of how to utilize the reports for program implementation and oversight activities.	
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Disagreements

No.	Recommendation	Agency Explanation/Response	Proposed Alternative
1	Coordinate with the Office of Environmental Information to develop processes for annual distribution of TRI data to EPA regions and delegated state programs.	TRI data are already publicly available. However, knowledge of how to easily access the data and how its information may be useful in program implementation may not be known.	Coordinate with the Office of Environmental Information [OEI] to develop a usable format for sharing TRI data on discharges sent to POTWs, with OW developing materials to explain the utility of TRI data to NPDES permit writers and pretreatment program personnel. This will include exploring options for an online search tool to more easily identify TRI discharges to specific POTWs.

OIG Response: For Recommendation 1, the suggested revision meets the intent of the recommendation, and the report updated to reflect this. OW clarified that the estimated completion date for this recommendation is 09/30/2015. The Agency agreed to add additional corrective actions to address Recommendation 4, developing three additional reports by 09/30/2015. These reports are (1) report that will show who is required to report WET and, if they are required report, who has not reported WET data, (2) a report on WET violations, and (3) all chemical exceedances including WET.

CONTACT INFORMATION

If you have any questions regarding this response, please contact Deborah Nagle, Director of the Water Permit Division on (202) 564-1185 or Nagle.Deborah@epa.gov or Marcus Zobrist, Chief of the Industrial Branch on (202) 564-8311 or Zobrist.Marcus@epa.gov.

Attachments

cc: Cynthia Giles, OECA
Renee Wynn, OEI

Distribution

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